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Paper TRADE JOURNAL

REG. U. S. PAT. OFF.

VOLUME 126, No. 10 MARCH 4, 1948

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Volume 126 **Number 10**

Paper TRADE JOURNAL

REG U S PAT OFF

Executive and Editorial Offices: 15 W. 47th St., New York 19, New York
Published Every Thursday by Lockwood Trade Journal Co., Inc.

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Subscriptions: (Payable in advance) By the year, $5.00; Single Copy, This issue, One Dollar. *Postage Extra: To Canada,* $2.00; *To Other Foreign Countries,* $3.50. Member Audit Bureau of Circulation.

PAPER *established Feb. 17, 1899, combined with* PAPER TRADE JOURNAL, *Nov. 16, 1899.* PAPER *established Sept. 21, 1910, combined with* PAPER TRADE JOURNAL, *Feb. 19, 1926.*

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PAPER TRADE JOURNAL *is entered as Second Class matter at the Post Office at East Stroudsburg, Pa., under Act of Congress of March 3, 1879. Publication Office at Lockwood Trade Journal Co., Inc., 34 N. Crystal St., East Stroudsburg, Pa. Printed in U. S. A.* *Copyright 1948 by the Lockwood Trade Journal Company, Inc. The contents of* PAPER TRADE JOURNAL, *including all articles, illustrations, etc., are covered by copyright and may not be reprinted except by permission.*

PAPER TRADE JOURNAL *is indexed in Industrial Arts Index.*

CALENDAR OF COMING EVENTS

March 22-24—National Association of Waste Material Dealers, Inc. Annual Convention, Boston, Mass.

May 19, 20, 21, 1948—American Pulp and Paper Mill Superintendents Association, Annual Meeting, Roosevelt Hotel, New Orleans, La.

June 11-12, 1948—Paper & Twine Association, Annual Convention, French Lick Springs, Indiana.

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Cleans Pipes
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Paper TRADE JOURNAL

VOLUME 126, NO. 10 REG. U.S. PAT. OFF. MARCH 4, 1948

Luncheon and Dinner Close Paper Week

NEW YORK—Paper week drew to its close on Thursday of last week, when, with most of the meetings on the program finished the annual festivities attendant on the occasion were allowed to take over. Attendance was large, it was noted, although reports from the hotels had not been analyzed at the middle of this week. It is known that something more than a thousand guests sat down to the annual TAPPI luncheon, that more than eight hundred attended the APPA dinner—both on Thursday. TAPPI, which operates its own registration desk, had not completed its summary from this source, but the number had passed seventeen hundred by midweek. During the days that preceded this twin climax those in attendance had listened to talks on professional subjects at the TAPPI meetings, and to reports and studies of industrial topics at meetings of the APPA groups.

One such report, thoughtfully prepared, deserves a more detailed report than was possible to give it during the pressure of all of the other meetings of the week. This was the report before the Writing Paper Manufacturers Association of E. G. Amos, secretary of the APPA committee on Industrial Relations. Said Mr. Amos:

I welcome this opportunity to speak before the members of the Writing Paper Association. Most of you are particularly well-acquainted with the labor situation as it exists in your own bailiwick. My purpose in coming before you today is to give you a picture of the overall situation as it has existed during the past year, and what I think will be the outstanding problems in the field of employer-employe relations. I feel proud of the record that the paper industry has had in its relations with its employes. Of course we should not take all the credit ourselves. There are a number of factors to be considered, such as the small operation involved in papermaking as compared with some of our larger mass production industries. For the most part, ours is a rural community industry, and the nature of the process itself is such as to avoid the monotony often found in the assembly line techniques of many of the hard goods industries. Probably the greatest factors in the relatively good employer-employe relationships is to be

(Continued on page 20)

Eau Pleine Reservoir Reaches New Low

WAUSAU, Wis.—Eau Pleine Reservoir of the Wisconsin Valley Improvement Company, with a total capacity of 4,551 million cubic feet of water, had only 8 million cubic feet on February 22. Total reserves in the company's reservoirs were only 7.24 percent of normal. During the previous week 293 million cubic feet were taken from the reservoirs to maintain flowage of the Wisconsin river for hydro electric purposes. Total storage on February 22 was 1,232 million cubic feet, compared with 2,871 million cubic feet on the same date in 1947, and 7,648 million cubic feet on the same date in 1946.

The storage on February 22 was the lowest recorded during the last decade in the Wisconsin river storage system. The next lowest was on February 22, 1945, when the total was 1,704 million cubic feet.

St. Croix Stockholders Deposit Their Shares

BOSTON—Holders of slightly over 97 percent of the 24,882 shares of St. Croix Paper Company have deposited their stock with the Old Colony Trust Co., under an escrow arrangement which will give an undisclosed buyer 90 days in which to decide to make an offer for the stock.

E. R. LEONHARD
Heads Vegetable Parchment Manufacturers Association.

Seek Pulpwood Source In Rocky Mountains

GREEN BAY, Wis.—As a result of the curtailment of Canadian exports of pulpwood, Congressman John W. Byrnes, Green Bay, of the Eighth Wisconsin District and three spokesmen for the Wisconsin and Michigan paper industry, advocated last week that national forests in Montana, Colorado and Wyoming be opened to logging, to reduce the pulpwood shortage.

Byrnes and the industrialists asked the house appropriations subcommittee considering the agriculture department's budget to direct that part of the forest service funds be used in surveying the timber supply in the three states and in building access roads to it. Estimating the work would cost $750,000, the congressman emphasized that he favored no increase in the forest service budget but wanted this project given priority over others.

Byrnes was accompanied to the hearing by Charles R. Seaborne of Kaukauna, Wis., Norman S. Stone of Mosinee, Wis., and Francis Keifer of Port Huron, Mich.

They argued that the national forests should be thinned out to remove over-mature timber, to prevent the spread of bark beetle, disease, and to reduce the fire hazard resulting from dead wood.

They estimated that the sale of government timber would cover the cost of building the main access roads.

Byrnes also reasoned that without the timber from the national forests to balance the loss of the Canadian supply, the paper mills would have to look elsewhere—and that Wisconsin's own pulpwood would be rushed to market too soon.

Vegetable Parchment Elects Leonhard

NEW YORK—E. R. Leonhard, vice-president in charge of sales of the Paterson Parchment Paper Company, was elected chairman of the Vegetable Parchment Manufacturers Association at its recent meeting. A. Southon, vice-president of the Kalamazoo Vegetable Parchment Company, was appointed to represent the Association for the next three years on the Board of Governors of the American Paper and Pulp Association with Mr. Leonhard as alternate.

Riegel Promotes Two As Jacoby Retires

MILFORD, N. J.—Following the retirement of F. I. Jacoby, vice-president and general superintendent of Riegel Paper Corporation, on February 6 promotions have brought new assignments. Mr. Jacoby started with Riegel in 1906 as a shipping clerk and became general superintendent after thirty-eight years' service with the Company. His total service with Riegel numbered forty-one years, the last three of which he was vice-president as well as general superintendent. Mr. Jacoby is also a Director of Riegel Paper Corporation and will continue to serve the Company in that capacity.

At its Milford mill, Riegel is installing a new Fourdrinier machine which, with other new equipment, will increase its capacity to produce glassine and greaseproof papers by approximately 20 percent. This machine, designed for the most part by Mr. Jacoby, is almost ready to operate.

G. Lamont Bidwell, who has been superintendent of the mill department at Milford, becomes manager of the Milford mill, the company's largest plant. R. L. Kerridge, who has been an assistant to Mr. Jacoby, becomes manager of the company's three mills at Warren Glen, Hughesville and Riegelsville, N. J.

John L. Riegel, President of the Company, said:

"Mr. Jacoby has spent forty-one years of his working life with the Riegel Paper Corporation and has advanced to his position of great responsibility through many years of hard work and loyal effort.

"I am sure that all employes will join me in wishing him many years of happiness."

Mr. Bidwell joined Riegel Paper Corporation in 1930. He became Superintendent of the mill department at Milford in 1942.

FRED MEENDSEN

Bellack Will Enter Electrical Goods Field

APPLETON, Wis.—Richard F. Bellack, former executive vice-president of the Fox River Paper Corporation, has purchased the Butte Electric and Manufacturing Company of San Francisco, it was announced last week by Sutro and Company, investment bankers in that city.

Bellack is a former resident of Stevens Point, Wis., where he was advertising manager for the Whiting-Plover Paper Company before he left that position ten years ago to join the Fox River Paper Corporation. He also formerly was engaged in the printing business at Wausau, Wis.

Bellack left the Appleton company in 1942 for service in the army. He was a lieutenant colonel in the quartermaster corps. He was released from service about a year ago.

Union Bag Advances Sales Staff Figures

NEW YORK—Leonard J. Doyle, vice president and general sales manager of Union Bag & Paper Corporation, New York, has made known the promotion of several members of the general sales staff.

Fred Meendsen, formerly manager of market research has been appointed sales promotion manager. He will be in charge of sales promotion, advertising, and market research. Karl Smith, former sales promotion manager, has been appointed merchandising manager of standard products sales.

R. J. Harley, formerly Eastern district sales manager, standard bag sales, has been appointed district manager of corrugated container sales.

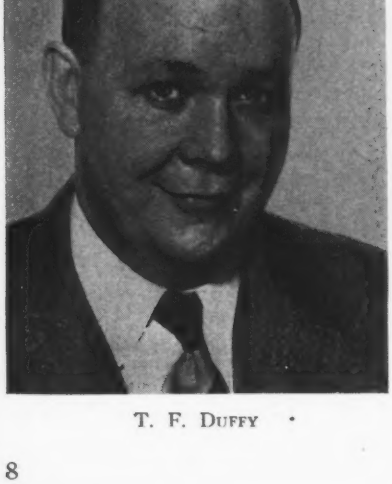
R. Davis, Jr., formerly sales representative in charge of the Memphis office, has been promoted to be Southern district manager, standard bag sales. He is succeeded in Memphis by D. J. Gibbons, of the Boston sales office, who in turn is succeeded by J. M. Dwyer of the New York sales staff.

T. F. Duffy, formerly New York metropolitan district manager for standard products sales, has been named Northeastern district manager. His territory now covers metropolitan New York, New Jersey, New York state and New England.

Flintkote's Engineer Named Conference Vice-President

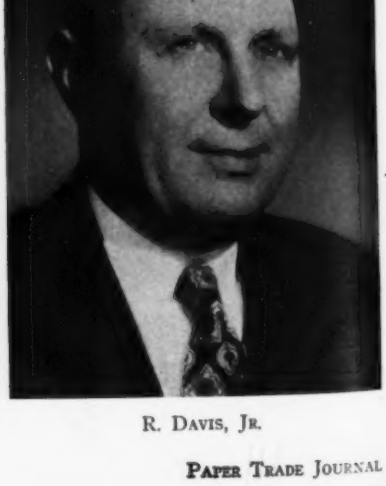
LOS ANGELES — Ernest Dutcher, safety engineer of the Pioneer Division of the Flintkote Company, has been named vice-president of the Tenth Annual Western Safety Conference to be held in Los Angeles, June 16-18, 1948.

Dutcher has had a long and outstanding record in industrial safety work, and he will help preside over the three-day conclave.



T. F. DUFFY

KARL SMITH



R. DAVIS, JR.

Byron Weston Moves Into New Space

PITTSFIELD, Mass.—The second-floor of the new finishing department at Byron Weston Company, has been completed and the sorting, counting, trimming and sealing employes have moved in. The large carton-packing machine has also been moved to the new building from the shipping department.

Company officials hope to have the first floor of the building ready for occupancy by April 1. The two floors will add about 25,000 square feet of floor space to the plant, and between 50 and 60 workers will be employed there under the direction of Paul Tupper, Superintendent of the finishing and shipping departments.

The building is 227 feet long and 82 feet wide. The first floor is 16 feet, 8 inches in height, and the second floor about three feet less. When completed, the ground floor will house the supercalendars, cutters and superwinders.

The building contains the latest air-conditioning equipment to maintain a constant humidity, which company officials point out is extremely important in the paper manufacturing business. It is constructed of steel, concrete and three types of glass blocks, designed to throw outside light in different directions. The interior of the structure and all stationary equipment are painted two tones of green and the ceilings are white.

Although the construction may not have an immediate marked effect on the number of employes, officials say that it will do much to streamline the flow of production by consolidating all finishing operations into one building. The new structure connects the two older mill buildings, thereby eliminating the necessity of transporting materials between them. Until about a year ago, a trolley operated between the buildings, and since the trolley was discontinued the material was carried by truck.

The new addition is the most extensive construction project completed here in many years. A dream of company officials before the war, it has been under construction for many months.

Blank Book Awards Four 50-Year Pins

HOLYOKE, Mass.—Robert W. Ely, Joseph Lemire, Charles Moran and Ernest Krause, Jr., four employes of the National Blank Book Company, received 50-year pins at the annual dinner and reunion of the Old Timers' Club February 21st. There were 250 members and guests present.

Those who received 15-year pins were: Paul Buckwalter, Joseph Macek, George Guay, Armand DesForges, Clifford Pomeroy and Fred Beatson.

There are 14 employes at the National who have worked there between 50 and 65 years. The Old Timers' Club has a membership of 269.

Company officials at the dinner were: Joseph M. Towne, president; Richard P. Towne, treasurer; Richard M. Weiser, company clerk, and Harold Hansen, plant superintendent. Andrew B. Mongum, company foreman, was master of ceremonies.

Appleton Machine Plans New Factory Building

APPLETON, Wis.—Appleton Machine Company is planning a building, 120 feet long, 45 feet wide and 40 feet high at its highest point, to house the company's roll shop, where paper rolls are constructed. The cost will be approximately $60,000. The new building will be adjacent to the present structure, surrounding it on the north and the east. Plans call for office space in the building, and the company is planning extensive use of glass brick.

The new structure will follow the contour of South Island street eastward from Oneida Street, angling sharply with the street. Provision has been made for a traveling crane in the new building.

The architects are Orbison & Orbison of this city, and the construction contract has been awarded to Miron and St. Aubin, also of Appleton. Excavation was scheduled to be started as soon as weather permits.

H. O. Nichols Heads Kraft Association

NEW YORK—H. O. Nichols of the Crown Zellerbach Corporation was elected president of the Kraft Paper Association, Inc. at its annual meeting held on February 26th at the Waldorf-Astoria. He succeeds George Stuhr of the Southern Kraft Division of International Paper Company. G. F. Henderson of the Brown Company was elected vice-president.

The following also were named to the executive committee for 1948-1949: W. M. Allin, Southern Advance Bag and Paper Co.; J. B. Cowie, Hollingsworth & Whitney Company; H. S. Daniels, Union Bag and Paper Corp.; J. R. Diggs, Mosinee Paper Mills Co.; W. J. Dixon, St. Regis Paper Company; D. G. Driscoll, Sorg Paper Company; K. O. Elderkin, Crossett Paper Mills; L. W. Gould, Gaylord Container Corp.; T. V. Heffernan, Gilman Paper Company; William Mazer, Hudson Pulp and Paper Co.; S. M. Phelan, Jr., West Virginia Pulp and Paper Company; W. C. Shorter, Camp Manufacturing Company and George Stuhr of Southern Kraft Division of International Paper Company.

Consolidated Raises Newsprint to $96

TORONTO, Ont.—Consolidated Paper Sales Ltd., the sales organization for Consolidated Paper Corporation, last week sent telegrams to customers notifying them of an increase of $6 a ton in newsprint, effective March 1. Price Bros. also made a similar announcement. The new price will be $96 a ton in New York and the Canadian differential will apply to the various zones in Canada. The differential is approximately $6 a ton.

This virtually completes the round of price increases for newsprint started at the first of the year. Several leading Canadian newsprint firms made similar increases effective January 1. Consolidated at that time said there would be an increase before March 1, pending a study of the situation.

With the large Canadian companies now selling newsprint at $96 a ton, New York, the price differential which brought forth considerable protest from some United States publishers is now largely eliminated.

Although Provincial Paper Company had indicated that it would increase the price of its fine paper products on March 1 it was not generally known in the trade at mid-week what the new price would be. Provincial Paper is known to be the largest supplier of fine papers to the publishers.

Notwithstanding any increase in the prices of fine papers by other firms, Howard Smith Paper Mills, Ltd., is not contemplating such a move at the present time, it is reported, and has not increased its prices. Neither Rolland Paper Company or E. B. Eddy Company, the two other principal fine paper producers, would indicate at mid-week what they might do, but they had not raised their prices at that time.

Gypsum Profits Rise By Twenty Per Cent

BUFFALO, N. Y.—The National Gypsum Co. reported 1947 net profit of $5,273,120, equal to $2.89 a common share after providing for dividends on the preferred stock. This compared with net of $4,023,952 in 1946, or $2.21 on the common shares.

President Melvin H. Baker pointed out that sales of $51,764,326 for the year exceeded those of 1946 by $13,707,414, a 36 percent increase.

Rhinelander Promotes Nelson

RHINELANDER, Wis.—The Board of Directors of the Rhinelander Paper Company, on January 13th appointed Robert F. Nelson to be executive vice-president. Mr. Nelson is assistant to the president, Folke Becker, and is also Director of Sales.

Mando Old Timers Now Total 461

KENORA, Ont. — Twenty veteran Mando employes celebrated a double anniversary February 25th, as guests at a dinner honoring the occasion of the Twenty-Fifth Anniversary of the opening of Minnesota and Ontario Paper Company's Kenora mill. They were presented gold signet rings symbolic of 25 years' loyal service by S. C. Stratton, vice-president and general manager.

This occasion climaxed a series of ring presentation ceremonies also held this year at the other Mando plant locations, Fort Frances, Ontario; International Falls, Minnesota; Spokane, Washington and Fridley, Minnesota, for 103 Mando employes attaining the 25 year status.

With the incorporation of these 103 workers into the Mando Old Timers Club, the total membership of this exclusive quarter century organization became a resounding 461—representing an aggregate service record of over 13,375 years.

Personnel records disclose that John N. Oas, buyer for the National Pole and Treating Division, is the oldest associate in length of service still actively employed by Mando. John's record of employment dates back to 1902—giving him 46 years of service. Upon receiving his ring from Guy H. Ramsey, Division General Manager, John said, "It seems too good to be true. All I can say is a million thanks to you and all the officers of the Minnesota and Ontario Paper Company."

Symbolic of the attainment of 25 years of loyal service with the present Company or its predecessors is the handsome gold signet ring especially designed with the Mando seal and individually engraved on the inside of the band. Sizes of this emblem of attainment which have been awarded present quite a contrast. They range from a size 6 for R. D. Main, Secretary-Treasurer, made to order to wear on his little finger, to a massive size 15½ worn by John Fichuk, blacksmith at the Mando Fort Frances mill.

Supplying Fichuk with a ring that could be comfortably worn proved a problem as in measuring the sturdy blacksmith for his ring, it was discovered that the size of his ring finger was larger than any sample available.

Sheppard Presents 19 Service Awards

WORCESTER, Mass.—The Sheppard Envelope Company's Mutual Benefit Association held its 8th annual dinner February 28 in the main ballroom of the Sheraton Hotel. The event, largest single social function of the company year, was held for the benefit of all employes.

Principal speaker of the evening was company president, Miss N. Myra Glazier. Miss Glazier also presented a total of 22 service awards. Nineteen workers received service pins. And three others—Harry Hill, Russell Waid and Mrs. Sadie Anderson, all 25-year workers—were presented wrist watches in recognition of their service.

Special guests included Mrs. Helen Livingston of the National Association of Manufacturers, who is director of that organization's Women-in-Industry program. Officers and directors of the company also were in attendance.

Paper Merchandising To Print Guide for NPTA Convention

A service of interest to paper mill sales organizations is the detailed listing of mills and converters, the hotels in which they will have suites, the products they will feature and their personnel in attendance at the coming NPTA Convention at the Waldorf-Astoria, New York City, April 4-7. This will be published in the March issue of *Paper Merchandising* so as to reach paper merchant executives nationally two weeks before the convention opens. A map of mid-town New York, centering around the Waldorf and showing the locations of the other hotels in which various mills and converters will have their headquarters, is designed to help the visiting merchants plan in advance to make as many visits to their suppliers as possible.

In addition to publishing this information in the March issue of *Paper Merchandising,* it will be reprinted complete with all advertising and distributed to the merchants immediately upon their arrival for registration at the convention.

Flambeau Mill Installs Its Fourth Bleacher

PARK FALLS, Wis.—The Flambeau Paper Division of The Kansas City Star Company is now installing a new bleacher—their fourth. This bleacher will have a 4½-ton capacity and operate at a maximum density of 7 percent. Stebbins Engineering Company is installing the Bleacher Tank which is constructed of concrete-filled, steel reinforced tile. To facilitate circulation, the tank is designed with an inner sleeve or ring eight feet in diameter and funnel shaped at the bottom.

The agitator was designed by the Flambeau Engineering staff. It is a low head pump, mounted at the constriction of the funnel in the inner sleeve at the bottom of the bleacher. It will be driven with an extended shaft by a 60 H.P. vertical motor mounted at the top of the bleacher. A short screw conveyor will fill it from the present conveying system, and the bleacher will be dumped by a remote control hydraulic valve and a low head pump. The bleacher is being installed to extend the bleaching cycle and improve the quality of bleached sulphite.

Winners Are Named For Bolton Awards

NEW YORK—John W. Bolton & Sons, Inc. this week made known the prize winners in its Third Bolton Award Contest, which was conducted under the auspices of the American Pulp and Paper Mill Superintendents Association, Inc. The subject of the contest was "My Plan for Improving the Safety Record in the Pulp and Paper Industry." A large number of papers were submitted in this contest and a great deal of interest has been shown by both workers and management in this subject.

The national prize winners are as follows: First prize, $1,000: Ted Perry, Orchard Drive, Lewiston, N. Y. Second prize, $750: E. A. Page, Kimberly-Clark Corporation, Neenah, Wis. Third prize, $500: C. L. R. Dougherty, Union Bag & Paper Corporation, Savannah, Ga.

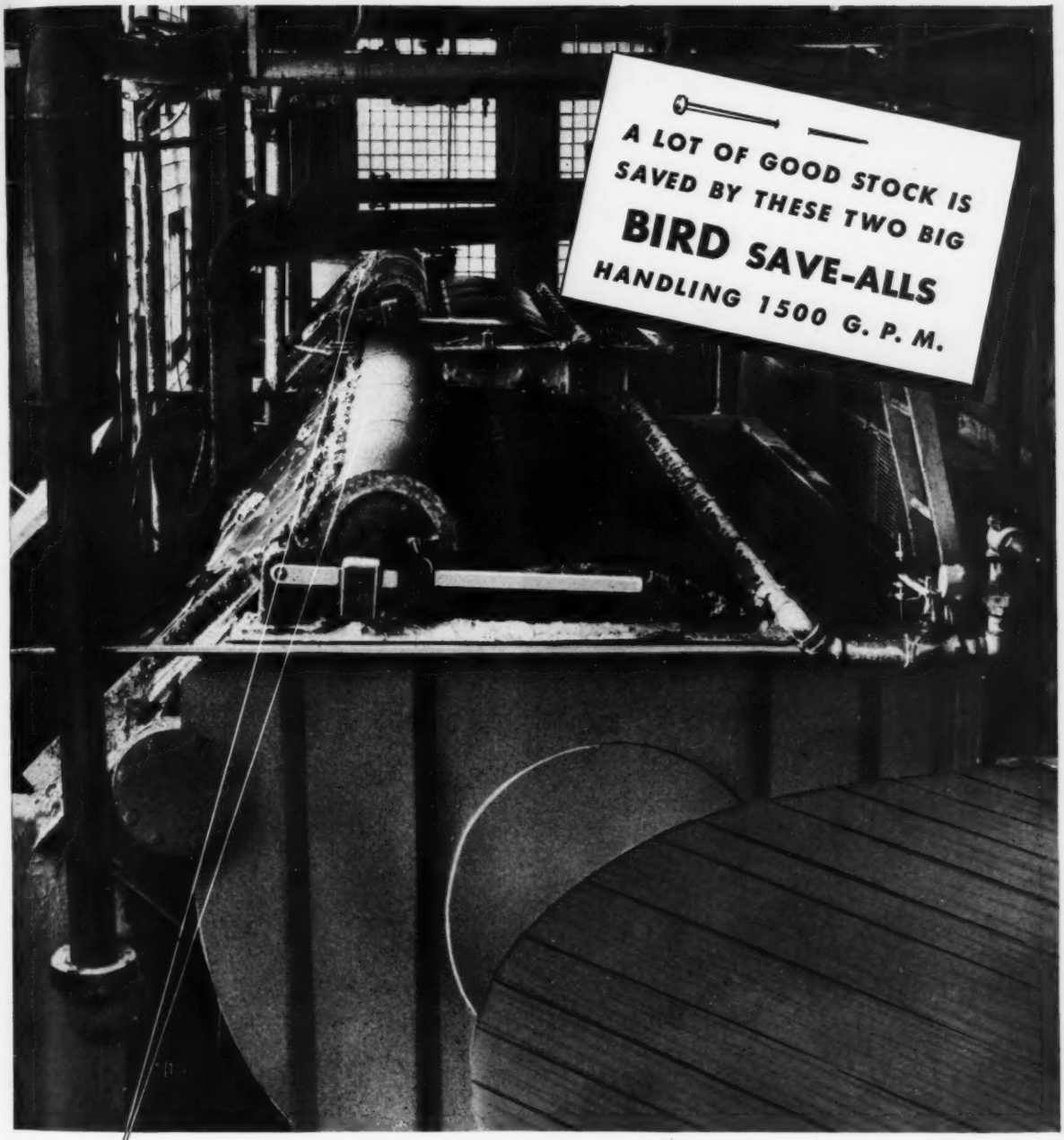
Divisional winners, each being awarded $100, were: Connecticut Valley: Thomas P. McDonnell, Tileston & Hollingsworth Company, Hyde Park, Mass. Miami Valley: George W. Harper, Mead Corporation, Chillicothe, Ohio. Michigan: Gordon Morseth, 1141 Holcomb Street, Detroit 14, Mich. New York-Canadian: George W. Holland, International Paper Company, Palmer, N. Y. Northeastern: Edward L. Lincoln, S. D. Warren Company, Cumberland Mills, Maine. Northwestern: Richard L. Talbot, Kimberly-Clark Corporation, Neenah, Wis. Pacific Coast: Fred R. Sievers, Route 1, Washougal, Wash. Pa.-N.J.-Del.: Frederick W. Judge, 38 Hilltop Rd., Ilchester, Md. Southeastern: C. A. Howard, West Virginia Pulp & Paper Company, Charleston, S. C. Southern: R. H. Worrell, Southland Paper Mills, Inc., Lufkin, Tex.

Chillicothe Starts Power Plant

CHILLICOTHE, Ohio—Its two-year construction program nearing completion, the Chillicothe Paper Company, is running tests on its new power plant in which, Vice-President E. F. Bearce said, would be placed in operation in the very near future. The plant will replace four old-style boilers. The company expects to put its third paper machine into operation soon, Bearce said.

Nepco Declares Dividend

PORT EDWARDS, Wis.—John E. Alexander, president and general manager of Nekoosa-Edwards Paper Company, announced today that the board of directors voted a twenty-five cent first quarter dividend at the monthly meeting held February 14 in the company offices at Port Edwards. The quarterly dividend will be payable March 31 to stockholders of record on March 19th, 1948.



LOOK at the nice heavy white overcoat on the couch rolls of these Save-Alls. That's good, high priced paper stock — and the Bird Save-Alls are sending it back to the machine chests for making into good, salable paper!

Bird Save-Alls get the stock out of waste water in the simplest, lowest cost way. Under present conditions they pay for themselves quicker than ever.

If you're still letting any of your precious papermaking fibres go down the drain, better see what you can do with the right Bird Save-All hook-up.

BIRD MACHINE COMPANY • **South Walpole, Mass.**

FINANCE

Puget Sound Profits More Than Trebled

BELLINGHAM, Wash. — Preliminary figures, subject to audit, indicate that Puget Sound Pulp & Timber Company realized a net income of $4,822,901 in 1947, consisting of $4,691,683 net profit from operations and $131,218 net capital gain from an instalment payment received on sale of Canadian timber, the total being equal to $12.31 a share on 389,094 shares of common stock outstanding at the end of the year. In 1946, profit of $1,320,507 from operations was equal to $3.83 a share on 326,940 shares of common stock outstanding.

Pulp production totaled 112,083 tons in 1947, against 84,257 tons in 1946. Industrial alcohol produced from waste sulphite liquor totaled 2,549,378 gallons, in comparison with 1,752,747 gallons in 1946. Net sales and other revenue amounted to $15,557,429 in 1947, against $7,333,777 in 1946. Taxable profit was $7,567,214 in 1947 and $2,129,850 in 1946. Provision for Federal taxes on income amounted to $2,875,531 in 1947, rising from $809,343 in 1946.

For the fourth quarter of 1947, pulp production of 31,164 tons compared with 27,373 tons in the third quarter and 25,500 tons in the fourth quarter of 1946. Net profit from operations amounted to $1,280,298, or $3.29 a share on 389,094 common shares outstanding, in comparison with $1,273,369, or $3.44 a share on 368,077 common shares outstanding in the third quarter of 1947, and $535,885, or $1.58 a share on 326,940 common shares outstanding in the fourth quarter of 1946.

Long term debts, which amounted to $1,412,637 at December 31, 1946, were reduced through payments and prepayments to $111,296 at December 31, 1947, this amount being the balance of timber contract payments which could not be prepaid under the contract terms. As of January 1, 1948, all preferred shares were converted into common or redeemed, capitalization now consisting entirely of 389,094 outstanding shares of common stock.

Marathon Net for Quarter Is Set at $1,212,840

ROTHSCHILD, Wis. — Consolidated net earnings of the Marathon Corporation and subsidiaries in the first quarter ended January 31, 1948, were $1,212,840 after provision of $723,390 for income taxes, D. C. Everest, president, announced here today. Earnings in the same period a year before were $1,130,837 after income tax provisions of $795,235.

After provision for preferred stock dividend requirements, the latest quarter's earnings were equivalent to 89 cents a share on 1,300,000 shares of common stock outstanding.

Net sales totaled $12,559,061, compared with $9,594,419 in the same period of the preceding fiscal year, an increase of more than 30 percent.

Haloid Declares Dividends

ROCHESTER, N. Y.—A dividend of 20 cents a share on the common stock and $1 per share on the 4 percent preferred stock was declared by directors of the Haloid Co., payable April 1 to stockholders of record March 15.

Eagle A Profits Up More Than Double

HOLYOKE, Mass.—An increase in American Writing Paper Corporation's net profits during 1947 as compared with 1946, is reported in a statement received by stockholders from Thomas Harper Blodgett, chairman of the board and president of the company.

After all expenses, including $417,440.61 for federal taxes on income, the net profit for the year ending December 31, 1947, was $574,490.28, Mr. Blodgett reported. The net profit for the year ending December 31, 1946, after all expenses, including $279,965.10 for federal taxes was $305,818.09.

For the last quarter of 1947, there was a profit of $7,911.93 after all expenses, including $17,135.86 provided for federal taxes on income, but before year-end adjustments. After year-end adjustments of $100,705.28, the profit transferred to surplus was $108,617. 21..

Mr. Blodgett's report also noted the previously announced facts that the corporation is now free from indebtedness in bank loans and general mortgage bonds, and that a dividend of 25 cents a share was paid on the common stock on Dec. 20, 1947.

The report concludes with this brief survey of current conditions and prospects: "Shortages have delayed the rehabilitation and modernization program. Raw material prices continue high and pulp remains in short supply. Market conditions for paper seemingly are approaching a balance between supply and demand, although prices are relatively low. Nevertheless every effort is being expended to continue the plans earlier conceived to maintain the high position of Eagle-A papers in such a competitive market."

FINANCIAL RECORD OF THE WEEK

New York Stock Exchange

High, Low and Last for Week Ending February 28, 1948

STOCKS

	High	Low	Last
A. P. W.	....	....	....
Armstrong Cork Co.	47⅛	45	47⅛
Armstrong Cork Co., pf.	90¾	90½	90½
Celotex Corp.	23⅞	22¾	23⅞
Celotex Corp., pf.	19½	19	19
Certain-Teed Products Corp.	14¾	13½	13¾
Certain-Teed Products Corp., pf.	....	....	....
Champion Paper & Fibre Co.	19¾	18⅜	19¾
Champion Paper & Fibre Co., pf.	94	92	94
Congoleum Nairn Co.	30⅞	29⅞	30¼
Container Corp. of America	36¼	35¾	36
Container Corp. of America, pf.	94¼	94¼	94¼
Crown Zellerbach Co.	29	27⅝	28½
Crown Zellerbach Co., pf., 4.20	92½	91½	92½
Crown Zellerbach Co., 4 pf. 4	108	107⅛	108
Dixie Cup Co.	32⅛	31¾	31¾
Dixie Cup Co., A	49½	49⅛	49½
Flintkote Co.	33⅞	33	33⅛
Flintkote Co., pf.	98	98	98
Robert Gair	8¼	7¾	8⅛
Robert Gair, pf.	19	18⅞	19
International Paper Co.	45½	43⅞	44⅞
International Paper Co., pf.	88	86	86
Johns-Manville Corp.	37	35⅝	36½
Johns-Manville Corp., pf.	102½	102	102½
Kimberly-Clark Corp.	20¾	20	20⅝
Kimberly-Clark Corp., pf.	93½	92½	93
Mac Andrews & Forbes	....	....	....
Mac Andrews & Forbes, pf.	....	....	....
Marathon Corp.	19¾	19⅛	19¼
Mead Corp.	17½	16¼	16½
Mead Corp., pf., 4¼	88	87	87
Mead Corp., pf. 2	36¾	36¼	36¾
National Container Corp.	12⅛	11½	11⅞
Paraffine Companies, Inc., new	22½	22	22
Paraffine Companies, Inc., pf.	....	....	....
Rayonier, Inc.	24¼	23	24¼
Rayonier, Inc., pf.	31⅝	31¼	31⅜
Ruberoid Co.	58½	55½	57
St. Regis Paper Co.	8⅝	8⅛	8⅝
St. Regis Paper Co., pf.	81	80½	81
Scott Paper Co.	42	41½	41½
Scott Paper Co., pf.	90⅝	90⅜	90⅜
Sutherland Paper Co.	39	39	39
Union Bag & Paper Corp.	29⅞	28⅜	29½
United Board & Carton	12½	12½	12½
U. S. Gypsum Co.	98	97	97½
U. S. Gypsum Co., pf.	....	....	....
United Wallpaper	4⅜	4⅜	4⅜
United Wallpaper, pf.	....	....	....
West Virginia Pulp & Paper Co.	39¾	39	39¾
West Virginia Pulp & Paper Co., pf.	101½	100½	101¼

BONDS

Celotex Corp., 3½s '60	99¼	99¼	99¼
Certain-Teed Products Corp., 5½s '53	....	....	....
Champion Paper & Fibre Co., 3s '65	....	....	....
Mead Corp., 3s 68	....	....	....

New York Curb Exchange

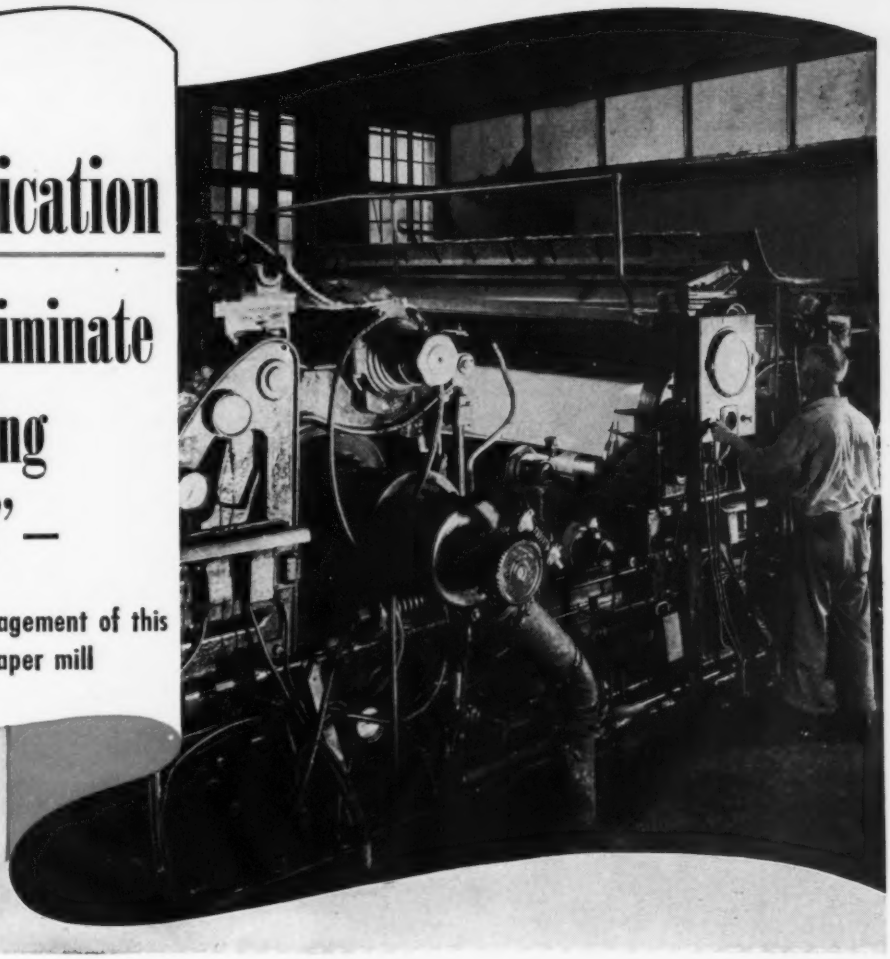
High, Low and Last for Week Ending February 28, 1948

STOCKS

	High	Low	Last
Great Northern Paper Co.	39½	39½	39½
Taggart Corp.	....	....	....

"Gulf Lubrication helped us eliminate costly cleaning of wet felts"—

says the management of this progressive paper mill



Actual photograph of press section in Maine paper mill where improved lubrication with Gulf quality lubricants solved a costly felt cleaning problem.

"IT'S small wonder we're partial to Gulf products and Gulf service," says the management of this large paper mill. "Prior to our introduction to engineered lubrication, we had a number of serious problems—and in every case a Gulf Lubrication Engineer has solved them to our complete satisfaction.

"For example: The lubricant we had been using on our wet felt roll bearings would get on the felt and gradually cover a considerable area along the edge. The inevitable result was partial destruction of the absorptive capacity of the felt—the lubricant filled and clogged the pores resulting in uneven drying of the edge of the paper.

"Upon the recommendation of a Gulf Lubrication Engineer, we changed to a special Gulf lubricant which furnishes effective protection under wet conditions. To insure an adequate, constant supply of oil, he also suggested a different method of application."

"Here's how we benefit from these two practical changes! We've eliminated the need to shut down for cleaning felts—so we're getting greater production. We have no costly cleaning bills and our felts last longer."

To get benefits like these in your mill, call in a Gulf Lubrication Engineer and ask him to make a survey of your equipment and make suggestions for improving your lubrication practice. Write, wire, or phone your nearest Gulf office.

GULF INDUSTRIAL LUBRICATION

Gulf Oil Corporation Gulf Refining Company

Division Sales Offices:

Boston • New York • Philadelphia • Pittsburgh • Atlanta
New Orleans • Houston • Louisville • Toledo

New England Defers Its Seaway Hopes

BOSTON, Mass.—Hopes of papermakers throughout New England that the St. Lawrence River might some day be converted into an inland waterway, to facilitate transportation in the six-state region, have been dashed by action in the United States Senate, where the St. Lawrence Seaway project was sent back to the shelf where it has been gathering dust for years.

A 57 to 30 vote returned the bitterly-contested plan to the foreign relations committee "for further study." It was widely interpreted as ending any chance for further consideration of the enabling legislation this session.

In putting the motion through, Senator Smith of New Jersey and other critics of the legislation prevailed over such advocates as Senator Vandenberg of Michigan and Senator Aiken of Vermont.

Vandenberg stepped down from the presiding officer's desk during the course of the Congressional session to plead for approval of the project. "One day this may well be the nation's lifeline," he declared.

Senator Bricker of Ohio argued, on the other hand, that the project might well become "a national peril" if the nation came to depend on the seaway and then an enemy blew it up.

The proposal called for construction of a waterway link between the Great Lakes and the Atlantic Ocean, and also for the construction of a 2,200,000 horsepower hydro-electric plant near Massena, N. Y.

The United States and Canada were to construct the entire project jointly. Advocates said it would be self-liquidating.

Army Engineers estimated the United States' share of the cost would be roughly $500,000,000.

Some, but not all, of the mid-western senators supported the project on the theory it would lower the cost of shipping agricultural products.

It was opposed in committee hearings principally by railroads, eastern and Gulf Port cities, private utilities and some shipping interests.

Some of the opponents questioned the value of a waterway which, they said, probably would be frozen over six months a year.

The virtual rejection of the legislation in Washington marked the third time in nearly 14 years that the Senate has thus acted.

Parsons Shows Plant To Visiting Stockholders

HOLYOKE, Mass. — Dr. Edward P. Bagg was reelected president and Henry V. Burgee was renamed vice-president and general manager of the Parsons Paper Company, at the 95th annual stockholders' meeting held recently at the company's offices here.

Several of the stockholders present took the opportunity to visit the new paper mill that was build by Parsons last year, and to see the plant rehabilitation work now going on.

Other officers reelected were: Wilbert E. Canfield, secretary, and Elmer B. Cooley, treasurer. The following directors were reelected: John Bagg of Greenfield, Atty. Eliot P. Brooks, Richard M. Weiser, Roy E. McCorkindale, Dr. Bagg and Messrs. Burgee and Cooley.

Wisconsin Starts Its River Inventory Plan

MADISON, Wis.—About five years will be required to complete the inventory of Wisconsin river resources ordered recently by the Wisconsin Conservation Commission. Rivers will be classified according to their physical attributes, economic and recreational values, and present impoundments.

A departmental committee will have an appropriation of $25,000 a year, and probably will be headed by Henry Kramer, assistant director.

General purpose of the study is to give the conservation commission a firmer foundation on which to stand when there arises conflicts between conservation and other interests in the use of Wisconsin rivers.

The commission has several times recently taken a stand in oppisition to hydro-electric dams on principal northern Wisconsin rivers, but has been defeated. Its members feel that one reason for their failures has been the lack of sufficient data on the necessity for river conservation.

Other members of the departmental committee will include J. R. Smith, of the game division, C. Harrington, of the forestry division, and Dr. E. W. Schneberger of the fisheries section.

Diamond Match Will Preach Safety on Books

SPRINGFIELD, Mass. — Contributing toward the protection of America's forests, the Diamond Match Company, will soon begin a free distribution of hundreds of thousands of book matches bearing a warning against carelessness with fire.

The matches are to be furnished to hunters, fishermen, vacationists and other visitors to timberland in New England, the Middle West and West.

The matches will be handed out through the company's 68 West Coast and 34 New England retail lumber yards and building supply stores, through lumber camps and the U. S. Forest Service.

The company is showing an active interest in the prevention of forest fires because it holds a quarter-million acres of forestland and believes that the loss of this property to them could be as great a blow as loss to other owners.

Holyoke Water Power Enters Controversy

HOLYOKE, Mass.—The Holyoke Water Power Company, has been granted authority by the Federal Power Company, has been granted authority by the Federal Power Commission to intervene in the application of the Holyoke Gas and Electric Department for a permit to study the development of the Holyoke and Enfield (Conn.) power facilities.

This is the newest step in the controversy between the Gas and Electric Department—which wants federalization of power on the river—and the Holyoke paper mills, which fear the possible collapse of their industry here if they lose all-important power rights which they have developed over the years in building up the paper industry in Holyoke.

The local power company asked for the right to intervene several weeks ago, and announcement was made in Washington on February 27th that this request has been granted.

The hearing is expected to be held in Holyoke sometime in April. The power company will protest the granting of the permit to the Gas and Electric Department. The permit would enable the Gas and Electric Department to prepare a study on a plan whereby, if approved, it would take over the Holyoke Water Power Company properties.

Seeks Abatement of Housatonic Odors

PITTSFIELD, Mass. — City Council man Leland C. Talbot has filed a petition with the City Council seeking action to end alleged malodorous conditions emanating from the east branch of the Housatonic River. His petition was signed by 118 residents from a wide area.

Councilman Talbot, in presenting the petition, requests the investigation into the situation to include an inquiry into the sources of waste both local and outside the city limits. Adjoining towns which pour domestic sewage into the river are included in the inquiry requested.

The petition states thta "the dread polio germ undoubtedly comes from sewage and other filth," and asks that immediate action be taken to remedy the situation.

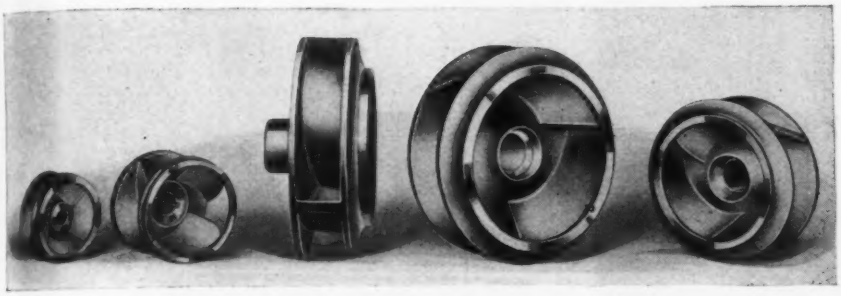
Labor Council Pledges Support for Safety Group

MENASHA, Wis.—Full support of the safety program sponsored by the Twin City Safety Council was pledged last week at a meeting of the Twin City Labor Council. The later group, consisting largely of paper mill workers, is working for elimination of the concrete abutments above ground, in the belief that such abutments constitute a serious threat to highway safety.

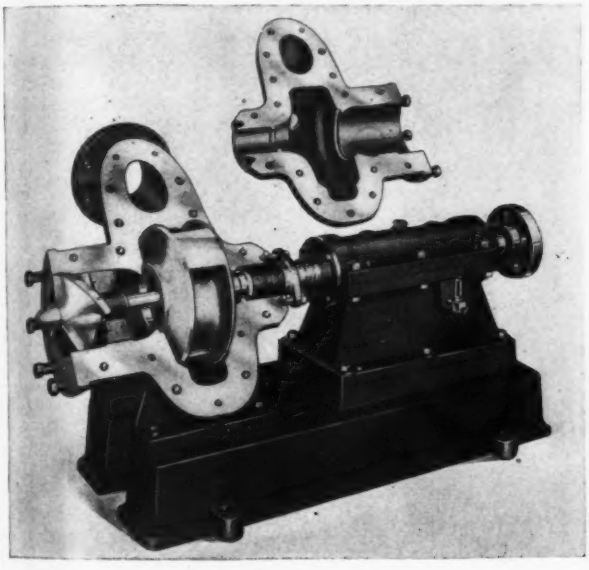
CENTRIFUGAL PUMPS FOR EVERY SERVICE

Are your pumps RIGHT FOR THE *Service?*

PUMPS by "Buffalo"



Buffalo Enclosed Impellers for Various Paper Stocks



HUSKY, efficient, accessible! Note the sturdy construction of this Buffalo Diagonally Split-Shell Pump for high consistency stock with low submergence. "Buffalo" builds a variety of non-clogging impellers, too, to fit the need.

BUFFALO PUMPS are "Specialists" —Engineered to Special Jobs!

First came the need, then the pump to handle it! "Buffalo" engineers have built a broad line of paper stock pumps *based on what paper mill operators want.*

The result today — a "Buffalo" pump to handle whatever liquid, consistency or head your operation requires — to do it cheaply, efficiently and with minimum attention. You'll save money — keep liquids moving on schedule — with Buffalo pumps. Let us know the conditions. We can recommend the right pump without bias.

. . . Write us for complete information . . .

For

- ★ WATER ANY TEMPERATURE
- ★ PAPER STOCKS (NON-CLOGGING)
- ★ GENERAL SERVICE
- ★ ACIDS
- ★ ALKALIS
- ★ SLURRY
- ★ CONDENSATE RETURN
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- ★ FIRE SERVICE
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- ★ SELF-PRIMING SERVICE

BUFFALO PUMPS, INC.

159 MORTIMER STREET BUFFALO, N. Y.

Canada Pumps Ltd., Kitchener, Ont.

RUGGED, PRECISION CONSTRUCTION — FOR LONG LIFE

AUSTRALIAN NOTES

PERTH, W. A.—Imports for the month of November, 1947, show a decided drop as the result of dollar cuts, tonnage being 12,916, a drop of 5,950 tons compared with October, and of 3,916 tons compared with November, 1946.

During the month other printing papers landed came from Sweden, the United States, Finland, the United Kingdom, Canada, Norway and other countries (values being in the order named) and imports included: (weights in Australian hundredweights of 112 lb.) — Imitation art, 8,348 (Sweden 5,262; Finland 1,212; U.S.A. 878; U.K. 758; Belgium 143; Norway 95); other coated printings, 11,611 (U.S.A. 7,687; U.K. 1,825; Belgium 961; Sweden 573; Norway 416; Czechoslovakia 149); glazed imitation parchment, 1,712 (Finland 986; Sweden 590; Norway 72; U.K. 64); lithographic, machine glazed or one side calendered, 2,241 (U.S.A. 965; Sweden 544; Finland 391; U.K. 224; Norway 117); offset embossed, 318 (U.S.A. 242; Canada 76); poster printings, machine glazed, 2,923 (Sweden 1,966; U.K. 621; Norway 336); and other printing papers, 34,545 (Sweden 8,875; U.S.A. 7,971; Finland 5,584; Canada 4,444; Norway 3,157; U.K. 2,567; Holland 998; Austria 441; France 415; Netherlands East Indies 93).

A survey made by the Commonwealth Statistician, and issued on December 5, 1947, covers the year 1945-46 in detail. It states: "The paper manufacturing industry has been established in Australia for many years, but there was no marked development until the establishment, about 1938-39, of pulping plants for the production of pulp from native timbers. The industry is now operating in all States, but is chiefly centered in New South Wales, Victoria and Tasmania. There are two factories in New South Wales, five in Victoria, one in Queensland, one in South Australia, two in Tasmania and one in Western Australia. Pulping plants, producing pulp from eucalypt timber, are operating in Victoria and Tasmania, while in South Australia pulp is being produced from locally grown softwoods. The total production of pulp has increased from about 6,000 tons in 1938-39 to nearly 83,000 tons in 1945-46. The paper mills in Tasmania are engaged in the production of newsprint, writing and printing papers, whilst the mills in other States are producing wrappings, boards and other papers."

Dealing with the operations of New Zealand Forest Products Ltd., the chairman (Mr. David Henry) said recently: "Output from the board mill has reached a high standard, comparing favorably with the best oversea factories of similar size. . . . The Atiamuri mill will be operating in a few weeks; substantial progress is expected in 1948 with the Gangsaw mill at Maraetai; it is hoped to have the multi-wall bag plant operating next June, making further importation of multi-wall bags unnecessary. . . . Much preliminary work has been done on the establishment of a pulp mill, and a Scandanavian expert who is expected in April should speed up the work."

Commenting upon a recent report that co-operation between the New Zealand and the Australian governments might result in the two countries eventually producing all their own newsprint requirements, the Commissioner of the New Zealand State Forests (Mr. Skinner) says that he has no knowledge whatsoever of such negotiations. "The recent manufacturing in Tasmania of newsprint from the New Zealand pinus Radiata was entirely a self-contained experiment," he said.

Australian Paper Manufacturers Ltd., at Matraville, New South Wales, have introduced a particularly interesting "security plan" for employes. Main points to cover the firm's 4,400 employes are: (a) sickness and accident benefits of up to $28.80 a week during 26 weeks' absence from work; (b) notice of dismissal of from one month for employes with two to four years' service, to a year for those with service of 15 years or more; (c) funeral, X-ray, cardiograph, deep-ray and ambulance benefits.

At the recent annual meeting of the Whakatane Paper Mills, Ltd., it was announced by the chairman (Mr. G. H. Mackley) that preference shareholders voted in favor of reconstruction proposals to the extent of 98.87 percent of total votes cast, and ordinary shareholders 98.89 of all votes.

A recent patent application was one (No. 125,614—Australian Paper Manufacturers Ltd., New South Wales) for a method of recovery of chemicals from black liquor. Details lodged were: "The spent liquor from the alkaline pulping of cellulose material as wood is treated with strongly acidic materials, as for example sulphuric acid or sodium hydrogen sulphate (nitre cake) under conditions of controlled temperature and agitation to recover the lignin and related substances of desired properties with a minimum loss of useful inorganic chemicals. As an example, black liquor from the pulping of eucalyptus wood by the kraft process is adjusted to a total solids content of 25-30 percent and heated to about 55 degrees C while agitating vigorously, concentrated sulphuric acid and water (equal parts) are added so as to bring the pH to 2-4; following this the lignin is recoverable by filtration and washing."

Kimberly-Clark Profit Tops Six Million

NEENAH, Wis.—Net profit of $6,333,104.25 was earned by Kimberly-Clark Corporation during the year ended December 31, 1947, according to an income statement issued last week. This amounted to $4.22 per share compared with $3.15 per share of common on the same date in 1946. At the end of 1947 there were 1,499,520 shares outstanding and at the end of 1946 there were 1,199,520 shares outstanding.

Provision for preferred stock dividends amounted to $740,908.00, bringing the total net income to $7,074,012.25. Included in these earnings is income of the wholly owned subsidiaries—Kimberly-Clark Corporation of Canada, Ltd., the William Bonifas Lumber Company and the North Star Timber Company. Net sales, the statement showed, were $91,009,832.07 while net income before federal, state and Canadian income taxes was $11,168,824.31. These taxes were estimated at $4,333,473.73 leaving a remainder of $6,835,350.58 plus $238,661.67 in net income of companies.

Cost of sales amounted to $72,895,284.30. The gross profit was $18,114,574.77 while general and selling expenses totaled $7,140,412.39. Profit from operations totaled $10,974,135.38, and other net income amounted to $523,791.49, bringing the gross income to $11,497,926.87. Interest on bonds and other interest, $329,102.56.

National Container's Sales Up 50 Per Cent

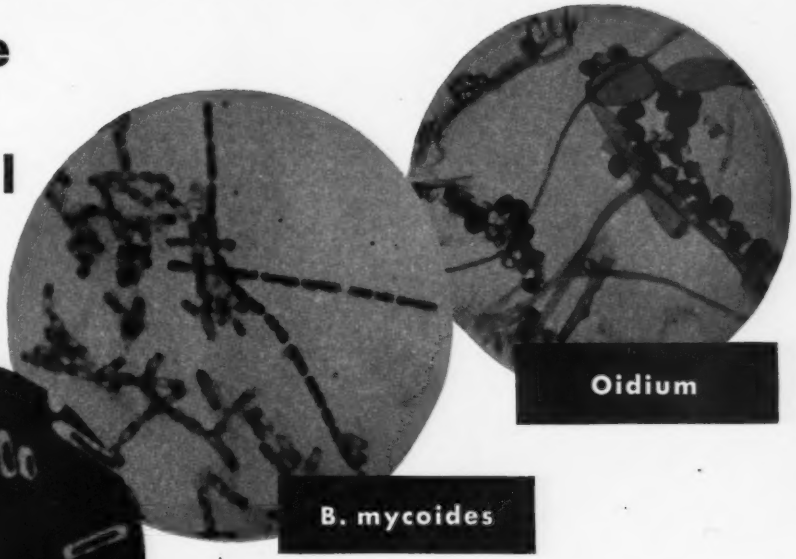
NEW YORK—Consolidated net sales of National Container Corporation and its subsidiaries for the calendar year 1947 amounted to $43,346,772.07, compared to $28,776,078.71 for the calendar year 1946. Consolidated net sales for the fourth quarter of 1947 amounted to $10,881,542.13, against $9,796,291.15 in like quarter of 1946.

Consolidated net profit for the year 1947 after all charges, including Federal taxes based on income, amounted to $10,913,358.62 and 4.13 per common share on 2,638,935 common shares outstanding as at December 31, 1947, after provisions for dividends on preferred stock. This includes a net profit on sale of securities of a wholly owned subsidiary amounting to $175,704.97 and $.07 per common share. This compares with net profit for 1946 of 5,605,896.27 and $2.27 per common share after adjusting for three for one split-up.

Consolidated net profit for the fourth quarter of 1947 was $2,624,743.30 and $.96 per common share, both inclusive of the profit on sale of investment mentioned above, and after provision for dividends on preferred stock. This compares with net profit in the fourth quarter of 1946 of $2,275,756.07 and $.91 per common share adjusted as indicated above.

You can't kill them all

with the same chemical



Aerobacter aerogenes

B. mycoides

Oidium

Making a count of organisms on agar plate in Nalco Bacteriological Laboratory — part of the world's finest water treatment laboratory.

Nalco has developed an effective control for each! . . .

THERE are a variety of slime-producing organisms, each with individual characteristics, each with a different resistance to controlling agents.

Nalco will determine the types of organisms encountered in your mill and provide the correct chemicals for completely successful control. But the Nalco System does not stop with the correct chemicals: It includes easy-to-use feeding equipment, determination of dosages and points of application and constant check-ups to maintain permanent slime control.

Mills that have tried the Nalco System have found a final answer to the slime nuisance — over 77% of Nalco paper mill clients have used the system for more than 5 years, more than 30% have been getting results they like for over 10 years.

Let Nalco help you secure *permanently* succesful slime control. Write for details and literature.

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— A Complete *Scientific Paper Mill Water Treating Service — Slime Control . . . Water Softening and Clarification . . . Controlled Alumina Sizing Method . . . Boiler Feedwater Treatment.*

IMPORTS

NEW YORK IMPORTS

WEEK ENDING FEBRUARY 28, 1948

SUMMARY

Newsprint	7071 rolls
Photo Paper	8 cs.
Drawing Paper	13 cs.
Wrapping Paper	44 bls., 1262 rolls
Parchment	4 pcls.
Jacquard Paper	1 cs.
Uncoated Paper	82 cs.
Gummed Paper	97 cs.
Filter Paper	118 bls., 55 cs.
Coated Paper	87 cs.
Tissue Paper	19 bls., 34 cs.
Writing Paper	1 cs.
Sulphite Paper	216 rolls
Wallpaper	13 bls.
Tracing Cloth	20 cs.
Printing Paper	4 cs.
Serviettes	24 crates
Miscellaneous Paper	1 cs., 2020 rolls

NEWSPRINT

N. Y. Journal American, Markland, Liverpool, N.S., 1065 rolls.

N. Y. Herald Tribune, Markland, Liverpool, N.S., 1893 rolls.

N. Y. World Telegram, Markland, Liverpool, N.S., 443 rolls.

Brooklyn Eagle, Inc., Markland, Liverpoll, N.S., 48 rolls.

Price & Pierce, Ltd., Markland, Liverpool, N.S., 222 rolls.

Washington Post, (Alexandria, Va.), Markland, Liverpool, N.S., 2682 rolls.

Alexandria Gazette, (Alexandria, Va.), Markland, Liverpool, N.S., 31 rolls.

Washington Daily News (Alexandria, Va.), Markland, Liverpool, N.S., 329 rolls.

D. C. Andrews & Co., Blydendyk, Rotterdam, 358 rolls.

PHOTO PAPER

J. J. Gavin & Co., Queen Elizabeth, Southampton, 8 cs. (unsensitized).

DRAWING PAPER

E. R. Hall & Vanderpoorten, N. Amsterdam, Rotterdam, 8 cs.

Stevens Nelson Paper Corp., Anchorage Victory, Genoa, 5 cs.

WRAPPING PAPER

American Express Co., Gripsholm, Gothenburg, 101 rolls.

The Borregaard Co., Inc., Gripsholm, Gothenburg, 701 rolls, 44 bls.

Chemical Bank Trust Co., Beatrice Victory, Gothenburg, 53 rolls.

National City Bank, Beatrice Victory, Gothenburg, 197 rolls.

Manufacturers Trust Co., Beatrice Victory, Gothenburg, 123 rolls.

The Borregaard Co., Inc., Beatrice Victory, Gothenburg, 87 rolls.

PARCHMENT

Van Oppen & Co., Aardyk, Antwerp, 4 pcls.

JACQUARD PAPER

Tricoma Inc., Gripsholm, Gothenburg, 1 cs.

UNCOATED PAPER

F. C. Strype, Blydendyk, Rotterdam, 82 cs.

GUMMED PAPER

B, F. Drakenfeld & Co., Media, Liverpool, 82 cs.

B. F. Drakenfeld & Co., Fort Ticonderoga, Liverpool, 15 cs.

FILTER PAPER

J. Manheimer, Avranches, Havre, 118 bls.

E. Fougera & Co., American Packer, Bordeaux, 34 cs.

H. Reeve Aangel & Co., Inc., Fort Miami, London, 21 cs.

COATED PAPER

F. P. Gaskell & Co., Eucadia, Glasgow, 87 cs. (for cigarette tips).

TISSUE PAPER

B. F. Drakenfeld & Co., American Scout, Manchester, 10 cs.

B. F. Drakenfeld & Co., Media, Liverpool, 6 cs. (pottery).

Bleyco Paper Corp., Gripsholm, Gothenburg, 19 bls.

B. F. Drakenfeld & Co., Fort Ticonderoga, Liverpool, 18 cs. (pottery).

WRITING PAPER

L. Bamberger & Co., De Grasse, Havre, 1 cs.

SULPHITE PAPER

Bank of The Manhattan Co., Beatrice Victory, Gothenburg, 26 rolls.

National City Bank, Beatrice Victory, Gothenburg, 54 rolls.

Bleyco Paper Corp., Gripsholm, Gothenburg, 126 rolls (unbleached).

WALLPAPER

W. H. S. Lloyd & Co., American Scout, Manchester, 13 bls.

TRACING CLOTH

Keuffel & Esser Co., American Scout, Manchester, 18 cs.

Defiance Sales Corp., Media, Liverpool, 2 cs.

PRINTING PAPER

Stevens Nelson Paper Corp., Fort Miami, London, 4 cs.

SERVIETTES

(———), Fort Miami, London, 9 crates.

(———), Media, Liverpool, 15 crates

MISCELLANEOUS PAPER

F. C. Strype, Blydendyk, Rotterdam, 43 rolls (Smooth white).

Chemical Bank Trust Co., Avranches, Havre, 1119 rolls.

Resolute Paper Products Corp., Gripsholm, Gothenburg, 234 rolls.

B. Shackman, Gripsholm, Gothenburg, 1 cs.

J. E. Bernard & Co., Gripsholm, Gothenburg, 76 rolls.

National City Bank, Gripsholm, Gothenburg, 467 rolls.

Scandinavian Export & Import Co., Gripsholm, Gothenburg, 28 rolls.

RAGS, BAGGINGS, ETC.

National City Bank, T. J. Stevenson, Istanbul, 2512 bls rags.

(———), Eucadia, Glasgow, 81 bls. old bagging.

Brandwein Mazur Co., Louis McHenry Howe, Shanghai, 200 bls cotton waste.

Amicale Wool Service Co., Louis McHenry Howe, Genoa, 130 bls old dark cotton rags.

Royal Manufacturing Co., Saginaw Victory, Antwerp, 73 bls cotton waste.

D. Benedetto, Inc., Exceller, Leghorn, 429 bls. rags.

Loumar Textile By Products Co., Exceller, Leghorn, 220 bls dark cotton rags.

C. Comiter, Laura Maersk, Shanghai, 200 bls. cotton waste.

S. H. Waldestein, Laura Maersk, Shanghai, 100 bls cotton waste.

Railway Supply & Manufacturing Co., Laura Maersk, Shanghai, 100 bls cotton waste.

Textile & Paper Supply Corp., Laura Maersk, Shanghai, 100 bls cotton waste.

(———), Laura Maersk, Shanghai, 200 bls cotton waste.

Atlas Waste Manufacturing Co., Sygma, Buenos Aires, 10 bls. woolen rags.

Josef Stein, Sygma, Buenos Aires, 23 bls. rags.

(———), Media, Liverpool, 65 bls new wool rags.

Chase National Bank, Media, Liverpool, 77 bls new wool rags, 92 bls wool thread waste.

American Express Co., Media, Liverpool, 21 bls wool rags.

Irving Trust Co., Gudrun Maersk, Rouen, 190 bls. bagging.

A. De Vries Trading Corp., Gudrun Maersk, Antwerp, 75 bls old bagging.

F. Stern, Anchorage Victory, Genoa, 1 bl rags.

(———), Anchorage Victory, Genoa, 130 bls. jute waste, 77 bls. jute bagging.

E. J. Keller Co., Inc., Anchorage Victory, Naples, 322 bls rags.

American Express Co., Fort Ticonderoga, Liverpool, 8 bls woolen rags.

National City Bank, Fort Ticonderoga, Liverpool, 5 bls wool rags.

Chase National Bank, Fort Ticonderoga, Liverpool, 17 bls wool rags.

CASEIN

National City Bank, Rattler, Melbourne, 600 bags.

American Cyanamid Co., Rio Atuel, Buenos Aires, 1000 bags.

Paul A. Dunkel, Rio Atuel, Buenos Aires, 1300 bags.

H. S. Cramer, Rio Atuel, Buenos Aires, 2032 bags.

(Continued on page 34)

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NEWS

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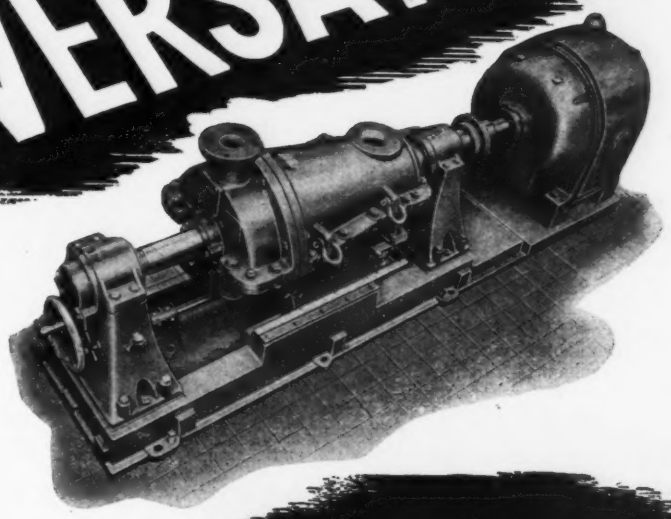


COATED BOOK BROKE

THE JONES *High Speed* REFINER

GROUND WOOD SPECIALTIES

The remarkable versatility of the JONES High Speed Refiner is evidenced by its use in mills everywhere. The fillings are individually designed for successful operation on every type of paper stock from news to rag. Used for general utility purposes, they replace large units handling same volume, and afford many operating advantages and economies.

RAG

MATRIX PAPERS

Jones

E. D. JONES & SONS COMPANY-PITTSFIELD, MASS.
Builders of Quality Machinery for Paper Mills

MANUFACTURERS AND DISTRIBUTORS IN CANADA WATEROUS LTD., BRANTFORD, ONT.

Luncheon and Dinner Close Paper Week

(Continued from page 7)

found in the fact that our industry offers very stable annual employment at high weekly wages.

I think all of you, as leaders in our industry should be proud of the accomplishments that the industry has made during the last eight years. The working force has increased from 138,000 to around 196,000 people in the period from 1939 to 1947. Paper and paperboard production in the United States has increased 56 percent in the same period. The productivity per individual worker has increased 9 percent in the same period. The average weekly wages in the primary pulp and paper industry rose from $24.92 in 1939 to $53.91 in 1947, an increase of $30.00 per week. The average weekly wage in the primary pulp and paper industry for the first ten months of 1947 was $53.91. The average weekly wage for all industry in the same period was $48.69, a difference of $5.22. Not only were weekly wages in the primary pulp and paper industry far ahead of the average wage in most other industries in 1947, but the edge which our industry has had over industry in general increased from $1.06 in 1939 to $5.22 in 1947. All these have been accomplished without the turmoil and disturbance which were so characteristic of most other American industries during the past decade.

The year 1947 was an outstanding example of the excellent industrial relations that have been characteristic of our industry. According to the records of the American Paper and Pulp Association, there were but eight strikes, which accounted for 122,879 man-days lost in 1947. Three of these strikes were called as a matter of union strategy: two were called to obtain union security: and the other three strikes were called on wage issues.

The past is useful in determining what the future holds in store for us. We are now operating under a new set of rules embodied in the Taft-Hartley Act. So far, the AFL Papermakers and the Pulp Sulphite Workers, as well as the CIO Papermakers have complied with the provisions required by the Act. However, District 50 of John L. Lewis' United Mine Workers has not yet complied with the law. This may lead to some difficulties, particularly if the local unions of District 50 decide that they want to operate under the provisions of the Taft-Hartley law. If such is the case, we may as well be in for a period of raiding by both the AFL and CIO international unions. The period from August 22 to date has been one of unique peace in the industry. Perhaps this is due to the fact that the unions do not feel sure of where they stand under the new Act, and it may be that the international unions may also be concerned with the possibilities of legal action against themselves, should a spirit of militancy within local units lessen the control of the international unions over the local unions.

Recently, upon going through one of the trade union journals of the 1920's, I came upon the expression "usual spring vacation." This referred to the spring strike that was taken for granted in one particular mill. I do not believe that there will be many spring vacations this year. There is no doubt but that there will be demands for increased wages. Until several weeks ago, the argument for increased wages was based on the high cost of living. The recent slump in the commodity markets has caused a shift in emphasis to the profit margins of 1947. It is my opinion that there will be few mills where the base rate will be less than a dollar an hour. I do not know what increases will be asked for, but it is safe to say that they will follow for the most part the national pattern set up in the mass production industries. Incidentally, the UAW (CIO) begins negotiations with the Chrysler Corporation today.

You can also expect that fringe issues will come into the collective bargaining picture. The general demand will be for six paid holidays, and the inauguration of some form of employe welfare plans, such as sickness and accident, and life insurance or pension plans. In some cases, there may be a demand for longer vacation allowances after fifteen years' service; or to grant added vacation for the second, third, and fourth years of service before the full two weeks allowance which is now prevalent, begins to operate.

What are some of the current problems arising in the industry? One of

The APPA resumes its annual convention week dinner

This headbox stands on its own feet

MONEL HEADBOXES are now standard equipment for Fourdrinier wet ends at plant of The Crane Company, Dalton, Mass. *Fabrication and installation by The Berkshire Sheet Metal Works, Pittsfield, Mass.*

Entirely self-supporting, it's another example of Monel's many wet end uses

Headbox problems are few in The Crane Company's mill at Dalton, Mass.

For Crane has standardized on Monel.*

And Monel headboxes are installed in one piece. They're *self-supporting.* They stay tight and don't leak.

They have no wood joints to swell and spring out of place. They need no protective paint. No preservative of *any* kind.

Smooth . . . and easily cleaned

Monel is both stronger and tougher than mild steel. It resists corrosion by paper stocks and white waters. Its surfaces stay smooth, and never give slime and fibre accumulations a chance to dig in and hang on. That's why it's so easy to keep Monel headboxes slick and clean merely by rinsing them with a fresh water hose.

Readily fabricated

Monel presents no problems to experienced fabricators. They can do almost anything with it. For example, The Berkshire Sheet Metal Works, Pittsfield, Mass., cut, bent and welded this headbox by commonly used methods.

For other jobs too

Because Monel shows no galvanic reaction with copper or brass parts, it has many uses throughout the wet end. Specify it for save-all pans and trays, suction boxes, rods, rolls, rails, fastenings, doctors and slices, as well as for headboxes. Let Monel help make *all* your equipment long-lasting and trouble-free.

THE INTERNATIONAL NICKEL COMPANY, INC. 67 WALL STREET, NEW YORK 5, N. Y.

MONEL

NICKEL (INCO TRADE MARK) **ALLOYS**

MONEL* • "K" MONEL* • "R" MONEL* • "KR" MONEL* • "S" MONEL*
INCONEL* • NICKEL • "L" NICKEL* • "Z" NICKEL* *Reg. U. S. Pat. Off.

the first questions that our office has been asked is whether or not the sixty-day reopening clause set forth in the Taft-Hartley Act applies to wage reopening as well as contract reopening clauses. At this point, I do not wish to comment on whether the sixty-day reopening clause does or does not apply to a wage reopening notice. Of course all of you are aware that you are entitled to a sixty-day notice from the union, should the union want to modify the labor agreement. Another important question concerns itself with the inclusion of initiation fees in the check-off provision of the labor contract. From the number of contracts wherein I have seen initiation fees deducted from the employes' pay, it appears that most people are of the opinion that initiation fees as well as union dues may be deducted, once a voluntary written authorization to do so has been given by the employe.

One of the most interesting developments growing out of the Taft-Hartley Act has been the increased activity of craft unions to carve out appropriate craft units from industrial organizations. Already within the primary industry the International Association of Machinists has won one election to represent the millwrights. I need not tell you the dangers involved and the work caused by multi-contract negotiations. The employer always loses out.

What remedy may be suggested to head off the inroads of craft unions in the industrial plants? My advice to you is that first you undertake an internal inspection of the wage structures existing within your mill. The purpose of this is to determine the relationship between the skilled and the unskilled workers. My second step would be to make an external inspection of the rates being paid to skilled workers in the community building or metal trades. These I would compare with the rates for similar tasks in my own plant. If there is not enough differential between the outside and the inside rates, watch out: the AFL craft unions will soon discover this and play it for all it is worth. If the spread between your skilled and your less-skilled workers is not sufficient, the skilled will grumble; and the unskilled may not consider the difference in pay given to their skilled fellow-men worth the effort to make themselves skilled. In order to correct both of these situations, many mills have adopted a policy of granting percentage and cents-per-hour increases. For example, all rates under one dollar per hour would be granted ten cents an hour increase, all rates above one dollar an hour would be given a 10 percent increase. In this manner, it is hoped to satisfy the skilled workers and at the same time forestall the inroads of craft unions.

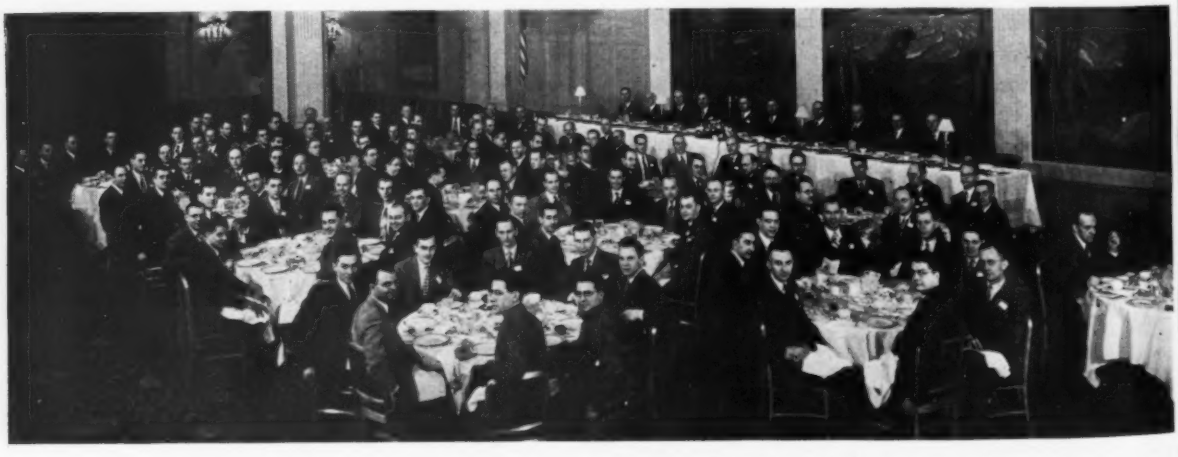
What other problems will we face in 1948? I think that it is pretty much agreed that the matter of bargaining over health and welfare plans, and pension plans will be decided by June of this year when the United States Supreme Court and the NLRB will have had time to review a number of cases involving this question. From the legislative side, it would appear that there will be much pressure to expand the scope of social security legislation in this country. This expansion will be of an intensive and an extensive nature. Intensively, there will be proposals to increase the amount of benefits to unemployed persons and to those eligible for old-age and survivors' benefits. Extensively, this means that the coverage for social security will be broadened enormously. Many agricultural and domestic workers, among others, will be brought into the field. In either case, it is likely that proposals will be made that the employer assume greater financial obligations to meet these expanded programs.

In closing, may I say that all of you should be proud of the record you have helped to maintain in the primary industry. We cannot be content, however, to rest on our laurels. Each of us must strive, if he is to expect the loyalty of his employes, to provide for decent working conditions, satisfactory wages, and above all to diminish as far as possible the greatest of all peacetime anxieties, the fear of unemployment.

John M. Hancock, one of the top United States industrialists, was to be the principal speaker at the annual dinner which marked, on Thursday night, a return to the semi-formal banquet for which an informal luncheon was substituted during the war years and immediately thereafter. Place cards at the speakers table included a number of leaders in the pulp and paper as well as allied industries, according to officials of the Association.

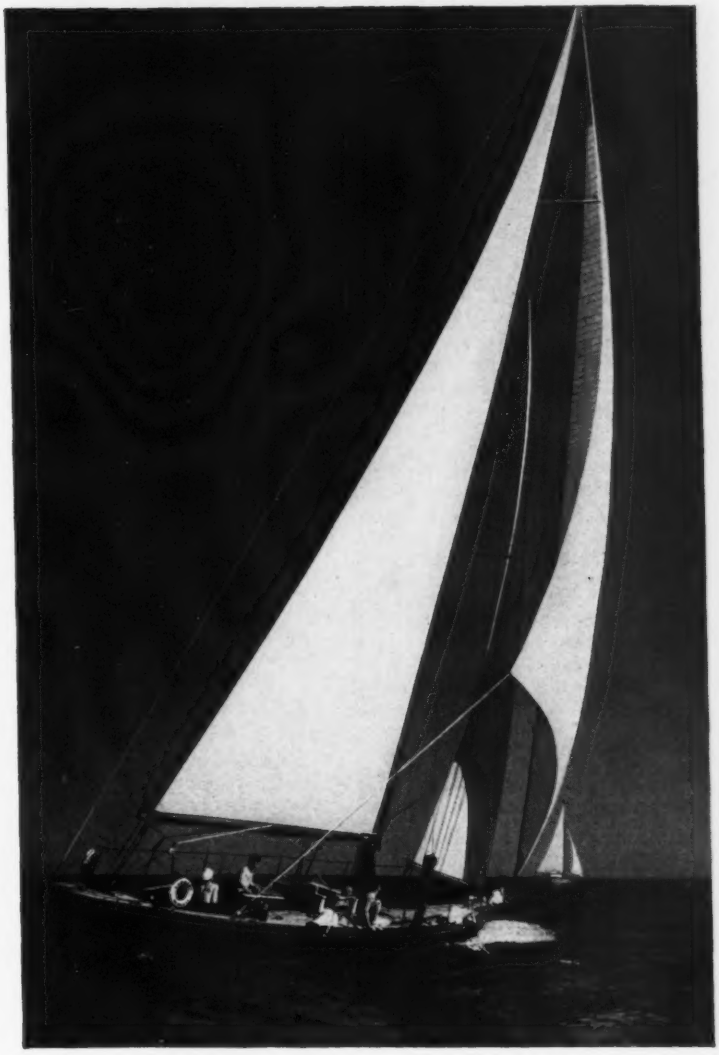
Mr. Hancock's subject, "International Control of Atomic Energy," is a topic on which he is fully qualified to speak. A partner in Lehman Brothers and co-author of the Baruch-Hancock "Report on War and Postwar Adjustment Policies," the speaker was the 1945 recipient of the famous Gannett Memorial Gold Metal awarded by the American Management Association. He did not enter the business world until 1919 when he joined the Jewel Tea Company as a vice-president in charge of administration. Prior to that time he had spent his adult life in the Navy. Less than five years later he was chairman of the board and Jewel Tea was solvent, with a notable reputation for aggressiveness and stability.

His important connections with the business world are many. They include the following: Director and chairman of the Executive Committee of The Flintkote Company and the Kroger Company; and directorships in American Export Lines, American Stores, Brunswick-Balke-Collender Company, Florsheim Company, International Silver Company, John Hancock Mutual Life Insurance Company, Kress Foundation, Sears, Roebuck and Company, Underwood Corporation, and several others. We was a member of the War Resources Board in 1939, and was associated with Bernard M. Baruch in the Rubber Survey of 1942. From 1943 to 1944 he was in the Advisory Unit of the Office of War Mobilization for War and Postwar Adjustment Policies. In 1946 he was a member of the U. S. Delegation to the United Nations Atomic Energy Commission.



New York State Forestry Alumni gather at the Roosevelt for lunch during paper week.

HIGH WHITENESS



Gleaming sails and fine coated paper have this one quality in common.

To meet the increasing demand for *high whiteness* in coated sheets, many paper makers have turned to Wyandotte Precipitated Calcium Carbonate.

This superlative paper-coating pigment is known for its brightness and smoothness. It is unequaled in hiding power and ink absorption . . . in freedom from grit and abrasiveness . . . in the uniformity so essential to machine coating.

For many years, Wyandotte Chemicals Corporation has made a *business* of supplying the Paper Industry with the finest in Precipitated Calcium Carbonate. Why not take advantage of the long experience and extensive research that have gone into the making of this fine chemical? Write for complete information today.

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Wyandotte
REG. U. S. PAT. OFF.

He was born in Emerado, North Dakota, and now resides in Scarsdale, New York.

On Friday, a group of 58 members of TAPPI were guests of the Johns-Manville Company on a visit to the plant and new research center at Manville, N. J. The limited time available did not permit the visitors to see all of this huge plant so the attention was focused on the transite pipe plant and the research centers. There two units were considered to be of greatest interest to members of TAPPI.

The manufacture of transite pipe is especially interesting to those most closely connected with the operation of pulp and paper mills. An enormous amount of this pipe is used for stock lines in the pulp and paper industry. About 20 different diameters of this pipe, ranging from 2 inches to 36 inches are produced in 10 and 13 feet lengths. Shorter random lengths and curved sections are also supplied to facilitate construction of any length or shape of pipe line.

The pipes are made by a rather unique method on single cylinder board machines. There are two of these machines, one for making 10 foot lengths, the other for making 13 foot lengths. Of course the sections are somewhat longer when made, to allow for trimming to the finished lengths of 10 and 13 feet.

The materials used include two different types of asbestos, one of which is obtained from Africa and the other from Canada. The blend also contains cement.

The two types of asbestos are first completely defiberized and then blended with the other materials in the dry state, before water is added to make the slurry which is supplied to the cylinder machines. The slurry in the cylinder vat is similar in consistency and drainage to a free wood pulp suspension. However, the suspension seems to form better with less tendency for the fiber to clot. The web is couched from the cylinder to a bottom felt on which it is carried to a mandrel supported between this bottom felt and a top felt. The sheet rolls up on this mandrel until the proper thickness is obtained, when the entire machine is stopped and the mandrel with the accumulated stock is removed and replaced by an empty mandrel. The machine is immediately started and the process repeated. Contrary to what most paper makers expect, the repeated starting and stopping of the machine apparently has no ill effects on the quality of the sheet and does not seem to cause any difficulties in operation.

After removal from the machine, the mandrel is pulled from the cylinder of wet stock which is then placed on a rack for transporting to the steam tanks. The mandrel must be removed from the wet cylinder within one minute after removal from the machine as the cement has begun to set and hardens quite rapidly.

The wet cylinders which we may now call pipe sections are then placed in one of six large steam tanks, each 7½ feet in diameter by 120 feet long. The pipes are cured in these tanks for 16 hours in an atmosphere of steam at 100 PSI.

After removal from the steam tanks the ends of the pipe sections are trimmed to the proper length and then placed in a large lathe which turns the outside surface, for about 18 inches in from either end, down to the proper diameter and wall thickness. This insures a good fit for the coupling.

The pipes are then tested for strength, weight etc. and are subjected to 600 PSI water pressure.

Some of the pipes are cut into short pieces for use as couplings. All cutting is done by carborundum wheels. The inside edges of couplings are levelled to facilitate the entrance of cylindrical rubber gaskets on each end of the coupling, thus making aligned tight joint in the assembled pipe line.

Curved sections of pipe are manually bent over suitable forms. This bending must be done immediately after the wet section is removed from the mandrel. Once the stock has begun to set, it cannot be bent.

After completing the visit to the transite pipe plant the group was taken to the Stockholm Restaurant on Route 29 near Somerville where they were guests of Johns-Manville Company for an excellent luncheon.

The trip through the research center required the entire afternoon until 4:30 P.M. Only one of the proposed six buildings has been finished although the second structure is almost complete. The latter will house the chemical research.

The building which is now in use has development laboratories and pilot plants for asbestos products, transite pipe and panels, asbestos paper, asbestos shingles, floor tile, asphalt shingles, magnesia block, firebrick, wood fibre products and diatomaceous earth.

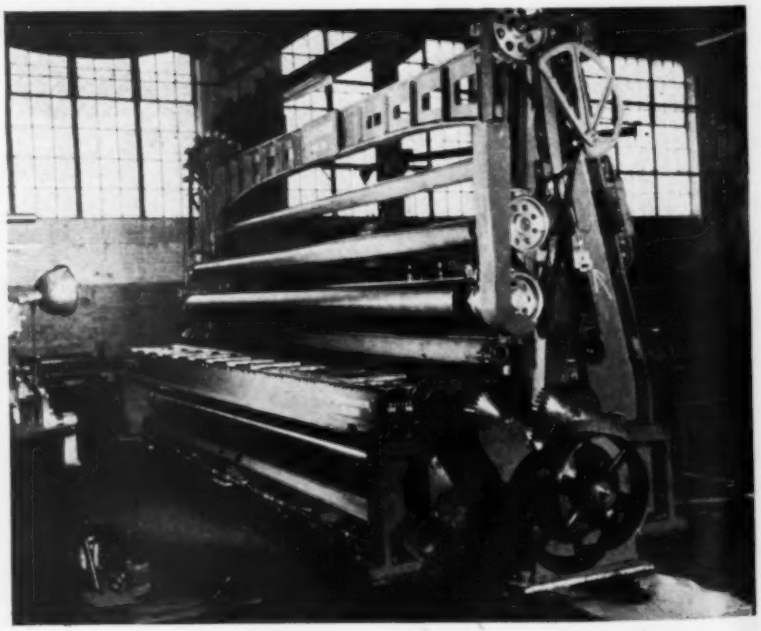
Most of the laboratories in this building are designed to accommodate two chemists or engineers working together. Each individual is allotted a space 11 feet by 26 feet so the double laboratories are 22 feet by 26 fee. In addition to his laboratory, each technologist has the use of a pilot plant designed to manufacture the particular product upon which he is working. These pilot plants are located directly across the aisle from the laboratories concerned with that particular product.

The pilot plants are equipped with commercial or semi-commercial equipment for manufacturing most of the products now being made by the Company. Eventually, there will be equipment in these pilot plants for making every product of the Company.

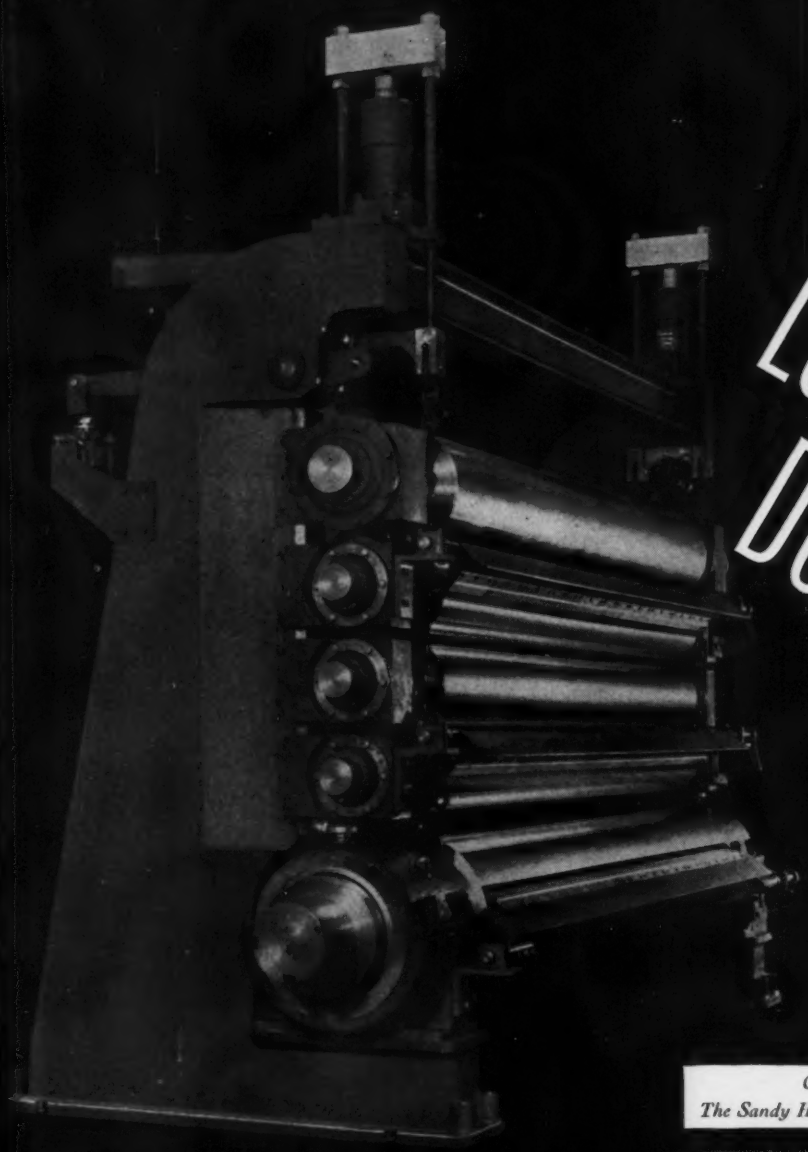
The magnitude and excellence of this research center gives a clear indication of the reasons for the present position of Johns-Manville Corporation as a leader in its field.

Brightwater Instals Jones Refiner

ADAMS, Mass—The Brightwater Paper Company, manufacturer of bond, ledger, and specialty papers, has installed an E. D. Jones High-Speed Refiner. This 75 HP unit is equipped with a special filling combination for the handling of rag and part-rag papers. The motor base is integral with the refiner base, and the Falk steelflex coupling provides direct connection between the motor and refiner. The mill reports that this refiner is working satisfactorily.



During the convention, this 266-inch Camachine Type 20 Winder was on display at the Cameron Machine Company, 61 Poplar Street, Brooklyn.



LODDING DOCTORS

Calender by:
The Sandy Hill Iron & Brass Works

Engineered for *every* position on *every* machine by Lodding Engineering Corporation, Worcester, Massachusetts, U. S. A.

Represented outside New England by W. E. Greene Corporation, Woolworth Building, New York.

Producers of

SULPHUR

Large stocks at our mines make possible prompt shipments

Uniformly high purity of 99½% or better

Free of arsenic, selenium and tellurium

TEXAS GULF SULPHUR CO. INC.

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Mines: Newgulf and Moss Bluff, Texas

OBITUARY

John Stadler

MONTREAL—John Stadler, 74, widely known consulting engineer in the pulp and paper industry, died at his home in this city on February 28th. He was a partner in the firm of Stadler and Hurter in Montreal.

Mr. Stadler was born in Bavaria, attended the Polytechnic School in Munich and Mitweida Technical School in Germany, and came to North America in 1902. He first worked for the Westinghouse Electric and Manufacturing Company in the United States. In 1903 he went to Shawinigan Falls, Que., to work for the Aluminum Company of Canada and later for the Shawinigan Water and Power Company. From 1907 to 1923 he was with the Belgo-Canadian Paper Company and was assistant general manager when he left.

He established his own business in 1923 in Montreal and began building pulp and paper mills. One of the first was the Newfoundland Pulp and Paper Company at Corner Brook, Nfld., where he was general manager for a period. In 1926 he built the Lake St. John Pulp and Paper Company mill at Dolbeau, Que., and acted as general manager. He was president of the Lake Sulphite Pulp Company and at one time or another has been an engineering consultant for most of the companies in Canada and many in the United States.

Mr. Stadler was a builder in every sense of the word. Personally, he was a man of large frame and a remarkable memory. He was always generous in sharing his knowledge with the engineers in Canadian professional societies. He was a member of the Technical Association of the Pulp and Paper Industry.

Robert P. Stevens

NEW HAVEN, Conn. — Robert P. Stevens who was engaged in the paper manufacturing business for over fifty years but who retired several years ago passed away in New Haven Hospital, early this month, at the ripe old age of eighty-seven years. He will probably best be remembered amongst the trade as the first superintendent of the paperboard mill of the National Folding Box Company, of New Haven.

Mr. Stevens was born in Woking near London, England, where his father was engaged in paper making also. He leaves three daughters, Mrs. K. B. Cole of West Haven, Conn., Mrs. Wm. A. Kane of Southbury, Conn., Mrs. F. S. Symington of Hamden, Conn., and one son Robert W. Stevens, well known paper mill consultant and manager of the paperboard mill of the Angelus Paper Box Company, of Los Angeles, Calif.

We make time

A vital factor in the paper and woodpulp industry!

Our intimate world-wide affiliations—branch offices and personal representatives—gear this international organization to the making of "time". Time, and timeliness, as the industry well knows, spell profits in the distributing and marketing of paper and woodpulp.

As importers and exporters of these materials, Elof Hansson Inc. has the broad facilities that bring buyer and seller together quickly regardless of where they are located. That makes time—and profits—for both.

The organization of Elof Hansson maintains offices in:

Gothenburg
London
Sao Paolo
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and representatives in all key cities throughout the world!

ELOF HANSSON INC.

220 EAST 42ND STREET NEW YORK 17, N. Y.

TRENDS

Office of the PAPER TRADE JOURNAL,
Wednesday, March 3, 1948.

"Dynamic growth in the United States manufacture of pulp, paper, board and products since the turn of the century places the industry today as one of the nation's major economic assets in terms of production, employment and purchasing power" states the United States Department of Commerce monthly review. "Not alone is the industry of vast importance in the domestic economy but also a leading factor in the foreign trade of the U.S. As an importer of pulpwood, woodpulp, newsprint and, to a lesser extent, other classes of paper, board and products, it accounted for about $657 million of exchange in 1947 available to several other countries of the world for the purchase of United States goods and services. In the same year, the industry exported products valued at $173 million to approximately 100 foreign countries. The significant dollar growth in the industry's contribution to international trade is disclosed by the table:

Total U. S. Imports and Exports
Paper Base Stocks, Paper and Manufactures
(In Millions of Dollars)

Year	Imports	Exports
1939	215	40
1945	298	102
1946	419	116
1947 *	657	173

* Preliminary.

"On the import side, in addition to woodpulp the U. S. imported 2,061,000 cords of pulpwood and 3,958,000 tons of newsprint, principally from Canada. Imports of other grades of paper, board and products amounted to about 80,000 tons. Besides pulp the U.S. shipped to various foreign countries in 1947 about 352,000 tons of paper and board and 122,000 tons of paper products. It is obvious that either in terms of value or quantity, imports of the products of the industry range many times greater than exports."

Commenting on raw materials for 1948, the report states that the outlook is very favorable for pulpwood, waste paper, domestic and imported wood pulp and most chemicals. "The freight-car situation is improving gradually and supplies of coal and fuel oil are expected to be reasonably adequate as the year advances. The only significant problem is that facing the several mills in the Lake States region affected by the proposed curtailment of pulpwood exports from Ontario. Some of these mills are reported to have fairly good wood inventories so that they could maintain output for most of 1948. However by 1949 they would face serious curtailment unless the Ontario Policy is rescinded or modified in the near future so that wood procurement planning for next season's forest operations can be gotten under way before long."

Further substantial price increases are pointed up by the Department of Commerce field offices, the reasons being basically: higher operating costs including raw materials, the interim railroad freight rate increases on paper and products, and anticipated higher labor costs in view of union contracts subject to re-negotiation this spring. The price advances reported during December and January ranged up to 10 to 15 percent on many paper items, both coarse and fine, and some industry representatives expressed belief that before the current price rise stops increases are expected to cover practically the entire paper line. (This report was written before the break in the commodities market.)

Newsprint

Domestic production and imports cooperated to bring the newsprint supply situation a little easement during the month of January when newspapers reported to the American Newspaper Publishers Association a forty-one days supply on hand and en route, compared with a thirty-nine day supply in January, 1946.

Price advances of $6.00 a ton in newsprint have been effected by two Canadian firms which did not follow the general advance on January 1. These become effective March 1 and bring the New York market price to $96.00, the Canadian to $92.00.

Woodpulp

Importations of market pulp show up surprisingly well against previous years despite the severe weather of the last two months. Canadian shipments during January totaled 32,043 tons ahead of January 1946, though falling 21,262 tons behind December tonnage. Heavy shipments reaching Boston, Norfolk and Philadelphia from Scandinavia contributed good tonnage to a short market.

Negotiation between the pulp and paper industries of Sweden regarding deliveries of woodpulp for this year are proceeding well, according to *Svensk Travaru-Tidning,* and agreement seems within reach despite dissension on certain points. Also it reports that better supply can be expected from Scandinavia in 1949, thus holding out small hope for this year. Commenting on production difficulties in Norway and Sweden, the periodical informs that "As a consequence of the long period of cold weather, the actual power situation has deteriorated, the afflux of water to the rivers being very limited. On the other hand, because of the thick layer of snow in the northern and middle parts of the country, there are good prospects for a material improvement in the spring and summer. The rationing of electrical power has hit the exporting groundwood mills harder than most industries, and in view of the somewhat brighter outlook as regards the water supply later in the year, the mechanical pulp industry has applied for a higher power ration. Considing the importance of the Swedish groundwood not only as a bartering object in our foreign trade but also as a raw material for the paper industry in several European countries, it is to be hoped that these applications for more power will meet with due consideration."

The Norwegian paper industry output it is hoped will reach the same level as that of 1947. "The prospects for the exports cannot easily be judged beforehand as a consequence of the increasing control and direction applied by the government both at home and in the purchasing countries. It has lately become evident that export sales are slower, not because of lack of demand but because of state directing, import restrictions and currency difficulties. As the needs still are great abroad, there ought nevertheless to be reasonable hopes for a total disposal of the export production. The prices fixed by the authorities for the home market are much too low, rendering losses to the mills. At the same time, prices for pulp and other raw materials have been steadily rising during the last year, and other raw materials also show a rising tendency."

It is learned from official sources in Washington that no increase in Finland's paper production for 1948 can be anticipated, that domestic paper consumption also is being held to 1947 levels. Sweden, according to the same sources, will reduce its paper consumption to 75 percent of the 1946 level, that its newsprint consumption will be 102,000 tons compared with 130,272 tons in 1946, and that newsprint and other printing papers will be allocated by government authority.

Waste Paper

Hope that the mild weather of the past weeks indicated an early spring with a heavy thaw of collections had its effect on the waste paper market this week, particularly as it produced cautious buying on today's prices. And while outlying areas felt but little easing of collection difficulties, it is reported that the heavy flow felt in city areas, particularly on Book which had been accumulating in homes and warehouses during the winter, produced a heavier supply than the mills would absorb, apparently expecting better prices as a result of open weather. A lull was experienced generally on low grades, with No. 1 news and Mixed easier. Corrugated holds steady. High

(Continued on page 34)

PRECISION ...the key to efficient valve performance

Needless to say, a valve must operate with precision to perform efficiently in actual service. But to make this possible there must be precision in everything that goes before—precision in design, in selection of materials, and in finishing to exact specifications.

Throughout more than a century of making valves—and valves only—"precision" has been the watchword at Powell. That is why today, in every branch of industry, Powell Valves are noted for efficiency under any and all service conditions.

And don't forget that Powell Engineers are always glad to help you select the precise valves to meet your individual flow control requirements.

The Wm. Powell Co., Cincinnati 22, Ohio

DISTRIBUTORS AND STOCKS IN ALL PRINCIPAL CITIES

Fig. 1793

Fig. 1793—Large 125-pound Iron Body Bronze Mounted Gate Valve. Made in sizes 2" to 30", inclusive. Has outside screw rising stem, bolted flanged yoke and taper wedge solid disc. Also available in All Iron for process lines.

Fig. 1503—Class 150-pound Cast Steel Gate Valve with flanged ends, bolted flanged yoke, outside screw rising stem and taper wedge solid disc.

Fig. 500—125-pound Bronze Gate Valve with screwed ends, screwed-in bonnet, inside screw rising stem, and either taper wedge solid or double disc.

Fig. 1969—150-pound Stainless Steel Gate Valve with flanged ends, outside screw rising stem, bolted flanged yoke-bonnet and taper wedge solid disc.

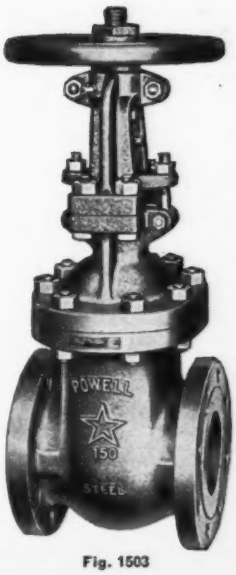


Fig. 1503

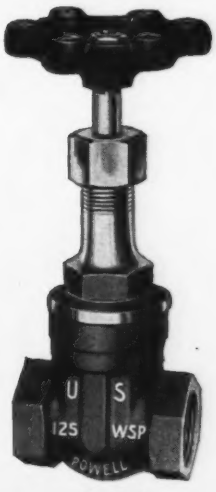


Fig. 500

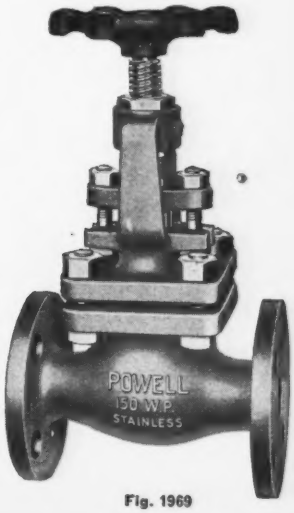


Fig. 1969

POWELL VALVES

Askania Devises Regulator To Control .1% to 1.5% Consistency

The control of thin stock consistency in paper and pulp mill operations has always presented a problem . . . the solution for which, it was known, would tend to increase both production and quality of finished product.

The original problem was, not so much how to control thin stock consistency, but how to measure the consistency of stock in the range of .1 to 1.5 percent. Conventional methods used for the measurement and control of higher consistency stock would not work with thin stock. At least the measurements obtained were often highly inaccurate. Thus any control operating from such a measurement was far from acceptable.

The conventional method was based on the relationship between viscosity and consistency and many different techniques were used in applying this relationship to the measurement of consistency by the measuring of loss of head in a pipe line, the loss of head due to friction.

Much of the research and the development of data on the behavior of pulp stock in pipe lines is contained in Cameron's Hydraulic Handbook and a

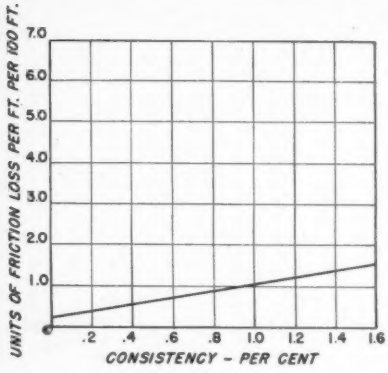


FIG. 1

plot of the data is shown in Chart 1. The viscosity—consistency relationship curve below 1.5 percent is extremely flat and any measurement of consistency changes in this thin stock range of .1 to 1.5 percent would be difficult and exceeding prone to error.

As the accuracy of any control or regulating device is 100 percent dependent on the accuracy of the measurement of the medium being controlled, it is easy to see why this conventional method of measuring thin stock consistency (.1 to 1.5 percent) was highly unsatisfactory.

Some time ago a new approach to the measurement of thin stock consistency was made and since that time a number of successful installations have been made. Following is a listing of a few of the installations: Marathon Corporation, Rothschild, Wisconsin; National Container Corporation, Tomahawk, Wisconsin; Munising Paper Company, Munising, Michigan; Penobscot Chemical Fibre Co., Great Works, Maine.

The new approach is based on another well known principle, the relationship between consistency and drainage rate. This principle is in every day use throughout pulp mills on deckers, screens and in other operations.

The application of the principle to the measurement of thin stock consistency is shown by the diagrammatic sketch of the Askania Consistency Detector. The mechanism, similar to a pulp decker, is supplied stock at a constant flow rate. The resistence to flow caused by the formation of stock on the upstream face of the cylinder will cause a variation in head of water upstream from the cylinder which will be proportional to a characteristic of the stock . . . the characteristic being the "drainage rate" of the stock.

Drainage rate is a characteristic resulting from a combination of at least two definite properties of pulp stock, consistency and freeness. If constant freeness is assumed (and it may be assumed with the same stock) the relationship between the upstream head in the detector box and consistency variations is linear and can be used as the primary measuring indication in automatic regulation. Curves of this relationship are shown in Diagram 1A

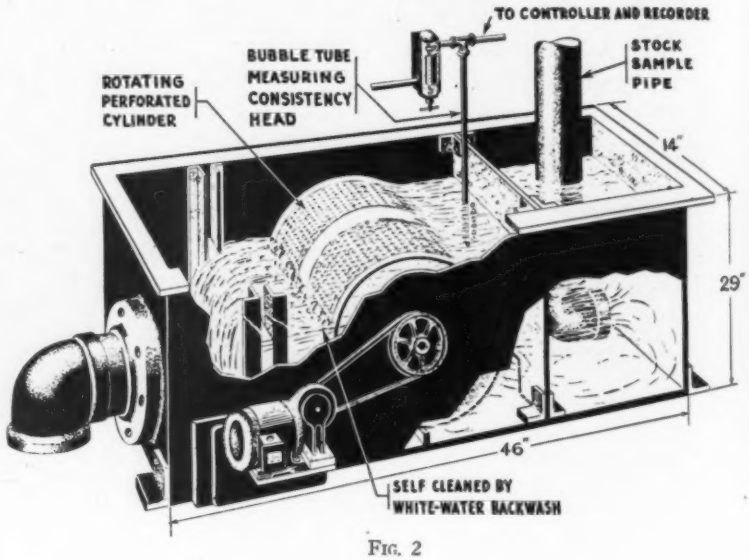


FIG. 2

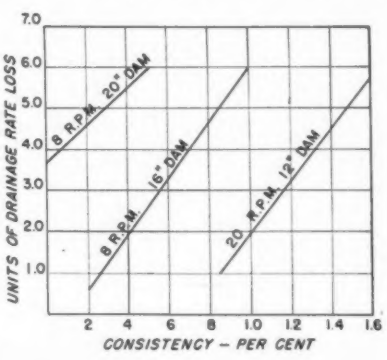


FIG. 1A

(under mill conditions). Compare the sharpness of these curves (in the consistency range below 1.5 percent) and the flat curve obtained by the older head loss measuring method. (Diagram 1)

With the accuracy of measurement obtained by the "drainage rate principle" an equally accurate comple control system was designed, built and a number of them installed in pulp mills.

The installed systems fall into two types:

1. Consistency regulation using double gate box on un-knotted stock ahead of knotting screens.

2. Consistency regulations plus automatic volume control operating on knotted stock after the knotting screens.

The basic difference in the two types of systems is the addition of total volume control to the pure consistency control available by the first system.

Both consistency and total volume control are operated from sampling lines. Only 75 gpm of stock are required to operate the control systems. Thus, the quantity of stock flowing to the screens has no effect on the control unit . . . the same control system can be applied to mills with a five hundred ton capacity or mills with a fifty ton capacity.

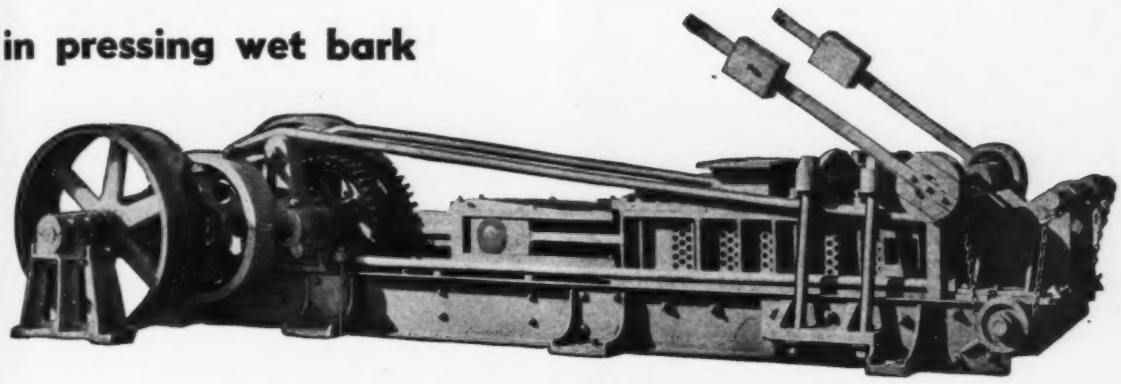
In this installation on unknotted stock ahead of knotting screens, the

the Improved

Giant Nekoosa Bark Press

Universally used

in pressing wet bark



Make Waste Bark Pay You a Profit

The Giant Nekoosa Bark Press will press all bark, with the exception of green balsam, 50% dry. In an average mill, steam produced from this pressed bark will pay for the equipment installation in less than a year. What could be a better investment?

The above statement has been proved many times in mills where they are in use. These machines truly turn waste bark into profits.

The Giant Nekoosa Bark Press has been standard equipment in many mills in the U. S. & Canada for twenty-five years.

Mfg. and sold in Canada by

Hydraulic Machinery Co. Ltd.

1972 Tansley St. **Montreal**

Nekoosa Foundry & Machine Works Inc.

Nekoosa, Wis.

Other Products

Wood Peelers	**Chip Cutter**	**Washers**
Flat Screens	**Agitators**	**Digester Fittings**
Ball Valves	**Deckers**	**Press Marking Equipment**

double gate has been built into an existing head box (A). Continuous sample (B) of the regulated stock leaving the box is delivered to the consistency detector (D) after the sample has passed through a constant level box (C). The consistency detector operates on "drainage rate principle" . . . fibers forming a mat on the rotating screen (E) the depth of the fibers determining the "drainage rate" of the water at the upstream end of the detector box. The height of the head (F) created at the upstream end is the pressure signal (G), which through the Askania Jet Pipe Regulator (H), controls the position of the double gate (K), by means of the hydraulic cylinder (L).

If the consistency at (A) drops below the desired percentage the gate

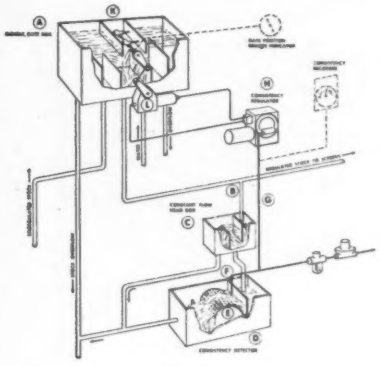


FIG. 3

automatically opens wider on the stock side and closes proportionately on the water side until the correct consistency is fed to the screens. Procedure reverses if stock becomes too thick.

Regulated stock from the mixing box "A" in this combined consistency and volume control system operating on knotted stock, flows at a fixed rate through constant flow head box "B," to the consistency detector "C". An air loading pressure signal from the detector is sent to the Jet Pipe Con-

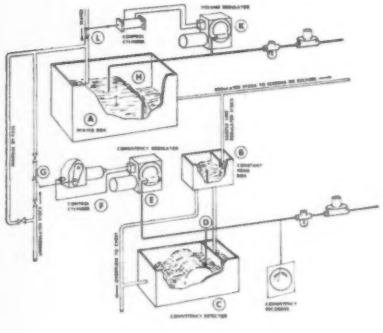


FIG. 4

sistency Regulator "E" which regulates flow of stock through valve "G" to mixing box "A".

Regulator "K" adjusts water valve "L" to maintain a fixed head of stock over weir "H" thus establishing constant volume control to the screens. Production can be regulated at the desired consistency and consistency can be regulated at the desired production.

The method of measuring and controlling consistency is the same as previously described.

For further data ask for Askania Regulator Company bulletin No. 145.

Imports

(Continued from page 18)

GLUESTOCK

Transatlantic Animal By-Products, Corp., Laura Maersk, Hong Kong, 200 bags hideglue.

Karr Ellis Co., Fort Ticonderoga, Liverpool, 582 bags hidecuttings.

WOODPULP

Bulkley Dunton Pulp Co., Beatrice Victory, Stockholm, 2595 bls dry sulphite pulp.

Cellulose Sales Co., Kristina Thorden, Soderhamn, 4225 bls air dry sulphate pulp.

Price & Pierce, Ltd., Markland, Liverpool, N.S., 2472 bls unbleached sulphite pulp.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 28, 1948

Castle & Overton, Inc., Exceller, Genoa, 233 bls dark cotton rags.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 28, 1948

The Borregaard Co., Inc., Beatrice Victory, Gothenburg, 19 bls, 1668 rolls wrapping paper.

Perkins Goodwin & Co., Kristina Thorden, Hernosand, 1524 bls half prime strong sulphite pulp, 4572 bls 1st qual. strong sulphite pulp.

Cellulose Sales Co., Kristina Thorden, Sandarne, 3625 bls air dry sulphate pulp.

BALTIMORE IMPORTS

WEEK ENDING FEBRUARY 28, 1948

Bulkley Dunton Pulp Co., Beatrice Victory, Stockholm, 612 bls dry sulphite pulp, 2250 bls dry easy bleaching sulphite pulp, 425 bls prime unbleached sulphate pulp, 150 bls prime bleached sulphite pulp, 225 bleached sulphite, 1585 bls prime bleached sulphate pulp.

Castle & Overton, Inc., Beatrice Victory, Stockholm, 600 bls dry easy bleaching sulphite pulp.

Gottesman & Co., Inc., Beatrice Victory, Stockholm, 2410 bls prime bleached sulphate pulp, 500 bls prime bleached sulphite pulp.

Price & Pierce, Ltd., Beatrice Victory, Stockholm, 1010 bls dry sulphate pulp.

Cellulose Sales Co., Beatrice Victory, Stockholm, 3150 bls air dry sulphite pulp.

National City Bank, Exceller, Genoa, 78 bls burlap rags

TRENDS

(Continued from page 28)

grades are firmer with many takers at unchanged price levels.

Chicago reports improvements in collections with a steady demand which gives a firm tone to the market. Prices are unchanged.

Boston prices were behind New York's and were viewed as more of an indication of Yankee caution in view of approaching good weather than a sign of improved collections.

Rags

The even monotone of the new cuttings market was essentially undisturbed this week. Limited supplies adequate to limited demand at maintained price levels kept the market on even keel without vigor. Mills are still buying with caution to meet reduced requirements, and supplies of cuttings are moving with only slight improvement. Prices are steady although the market is considered softer than as of last Fall.

Demand for old cottons is strong with trading limited by short supply, and roofing rags are in pronounced demand. Improved weather conditions have had small effect on old cotton rags, and supplies were quickly taken up. Prices are firm and quotations maintained. Supplies of foreign rags come at increased flow.

Index

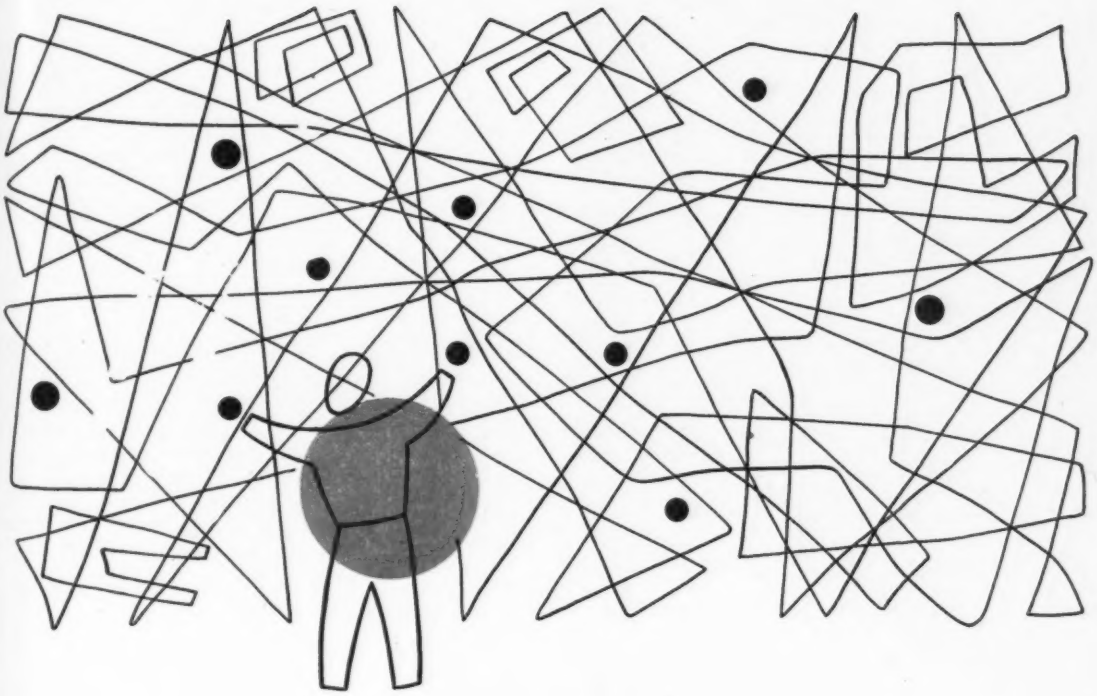
Index of general business activity for the week ended February 21 rose to 150.3 from 149.7 in the preceding week, compared with 146.2 for the corresponding week of 1947. Index of paperboard production declined to 171.9 from 182.4 in the preceding week, compared with 178.0 in the corresponding week of 1947.

Paper production for the week ended February 21 was estimated at 99.4 percent compared with 100.5 (revised figure) for the previous week, with 105.9 for the corresponding week of 1947, with 98.0 in 1946, and with 89.7 for the corresponding week of 1945.

Paperboard production for the week ended February 21 was 99.0 percent of capacity, compared with 101.0 for the previous week, with 103.0 for the corresponding week of 1947, with 97.0 in 1946, and with 97.0 for the corresponding week of 1945.

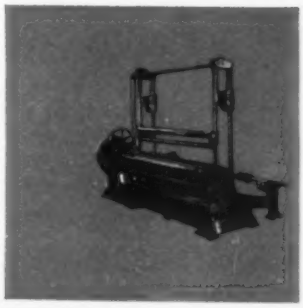
Hedstrom in Junior Achievement

BUFFALO, N. Y.—Eric L. Hedstrom, president of the Cooper Paper Box Company, has been appointed to a committee which will formulate plans for a Buffalo branch of Junior Achievement, Inc., a program for young people and industry.



Simple

There's no confusion with Langston's improved method of slitting! Through a simple and convenient control, the front shaft is movable both radially and laterally. Slitter blades disengage simultaneously and swing out from rear slitters, providing ample room with three lock positions: (1) thread-up, (2) set-up, (3) operating. Samuel M. Langston Company, Camden, New Jersey.



Langston

SLITTERS AND ROLL WINDERS

PRICES

With the elimination of price controls on paper, pulp, rags and other materials, the quotations given below once more become indicative of trends in an open market. At the moment they can be of little more, for, while some volume business still is being done under contract at the figures given below, fluctuations representing special conditions are too varied and too frequent to permit prices to be given as representing a wholly stabilized market.

Paper

(Delivered New York)

Standard News, per ton—

Rolls, contract	$91.00	to	$96.00
Sheets	102.50	"	109.00

Kraft—per cwt.—Carload Quantities
Zone A Deld. 40 lb. base wgt.

Superstandard Wrapping	$9.00	to	—
No. 1 Wrapping	7.25	"	8.00
Standard Wrapping	6.50	"	—
Standard Bag	6.50	"	—

Tissues—Per Ream 24x36 (480) 11 lb. Zone 1.

Wh. No. 1 Frd.	$1.84	to	$2.00
Wh. No. 1 M. G.	1.94	"	2.00
Wh. No. 1½	1.60	"	—
Wh. No. 2	1.75	"	—
Kraft Anti-Tar	1.65	"	—
Kraft Unbl.	1.85	"	—
Manila No. 2	1.62	"	—
Shred. Wh. No. 1 cwt.	1.10	"	1.50

Toilet—Per Case of 100 rolls—1 M Sheets.

Unbleached	$8.50	to	$10.00
Bleached	8.50	"	10.00

Paper Towels—Per Case of 3750—Zone 1.

Wh. Jr. M'tif'd 9¼x9½			$5.15
Br. Sr. M'tif'd 10x12			3.60
Br. Jr. M'tif'd 9½x9¼			3.10
Br. Jr. Sgl. fold 10 x10¼			3.15

Manila—per cwt.—C-l. f.a.

No. 1 Jute Tag	$14.50	to	—
Reg. Jute Manila	13.25	"	$15.50
No. 1 Manila	9.75	"	—

Boards, per ton—

Plain News	$92.50	"	—
Filled News	94.00	"	—
Plain Chip	90.00	"	—
Sgl. Mla. J-d. Chip*	100.00	"	102.50
White Pat. Coated*	120.00	"	—
Kraft Liners 42 lb.	100.00	"	—
Kraft Corr. .009	105.00	"	—
Binders Boards	126.00	"	—

* Base Prices per 10 tons. Less than 10 tons but over 3 tons, add $2.50; three tons or less, add $5; regular 35-39 basis, add $5; basis 40-49, add $2.50; basis 91-100, add $2.50; basis 101-120, add $5.

The following prices are representative of distributors' resale prices, all deliveries in Zone 1: Rag Content Bonds and Ledgers—

White, Assorted Items

	Bonds, per cwt.		Carton 4 C't'n Ton
100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Ledgers, per cwt.

100% Rag Ext. No. 1	$55.00	$50.80	$48.70
100% Rag	48.25	44.55	42.70
75% Rag	37.50	34.55	33.10
50% Rag	32.25	29.40	28.25
25% Rag	28.75	26.15	25.10

Sulphite Bonds and Ledgers—White, Assorted Items

	Bonds, per cwt.		
No. 1	$21.25	$19.25	$18.50
No. 2	20.25	18.30	17.55
No. 4	19.25	17.55	16.85
Ledgers, per cwt.			
No. 1	$21.75	$19.65	$18.85
No. 2	20.75	18.75	18.05
No. 4	20.00	18.10	17.35

Free Sheet Book Papers—White, Cased Paper

(Per cwt.)	Case	Ton
No. 1 Glossy Coated	$20.40	$19.50
No. 2 Glossy Coated	19.15	18.30
No. 3 Glossy Coated	18.40	17.60

(Per cwt.)	Case	Ton
No. 1 Antique (Watermarked)	$15.90	$15.15
No. 2 Offset	15.15 to 17.90	14.60 to 17.10
A Grade E. F.	14.90	14.25
A Grade S. & S. C.	15.40	14.65
B Grade E. F.	13.90	13.30
B Grade S. C.	14.40	13.70

Wood Pulp

Domestic mill contract prices delivered with varying freight allowances.

	Per Short ADT
Groundwood	$80.00 to $81.00
Unbleached Sulphite	124.00 " —
Bleached Sulphite	125.00 " 135.00
Bleached Soda	130.00 " —
Bleached Sulphate	175.00 " 185.00
Unbleached Sulphate Northern	125.00 " 155.00
Unbleached Sulphate Southern	130.00 " 145.00

Canadian Quotations

Prices delivered with varying freight allowances unless otherwise specified:

	Per Short ADT
Reg. No. 1 Kraft	125.00 " —
Unbleached Sulphite	125.00 " 126.00
Bleached Sulphite	125.00 " 135.00
Glassine Unbleached Sulphite (no freight allowance)	120.00 " —
Bleached Soda	130.00 " —
Groundwood	80.00 " 85.00
Sideruns Pulping News	80.00 " —
Hardwood and Specialty Grades	Nominal

Swedish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Kraft	175.00 " 185.00
Bleached Sulphite	175.00 " 185.00
Unbleached Sulphite	145.00 " 175.00
Unbleached Kraft	140.00 " 165.00

Finnish Quotations
On dock, Atlantic Ports

	Per Short ADT
Bleached Sulphite	$185.00 to —
Unbleached Sulphite	155.00 " 157.00
Unbleached Sulphate	147.50 " —

New Domestic Cotton Cuttings

(F.O.B. Shipping Point Plus Dealer's Commission)

White Shirt	$12.00	to $12.50
Unbleached Muslin	12.00	" 12.50
Light Silesias	9.00	" 9.25
White Back Blue Overalls	9.00	" 9.50
Blue Overalls	8.00	" 8.25
Fancy Shirt	6.00	" 6.25
Light Percales	8.50	" 8.75
Light Prints	7.50	" 7.75
No. 1 Washables	5.00	" 5.25
Bleachable Khaki	7.50	" 8.00
Unbleachable Khaki	6.50	" 7.00
Cottonades	5.50	" 5.75

Old Domestic Cotton Rags

(F.O.B. Shipping Point Plus Dealer's Commission)

	Per 100 lbs.
No. 1 Whites Repacked	$5.50 to $6.00
No. 1 Whites Miscellaneous	4.50 " 5.00
No. 2 Whites Repacked	3.50 " 3.75
No. 2 Whites Miscellaneous	3.00 " 3.50
Blue Overalls	3.75 " 4.00
Thirds and Blues Repacked	3.25 " 3.50
No. 1 Roofing Rags	2.10 " 2.15
No. 2 Roofing Rags	1.90 " 2.00
No. 3 Jute Bagging	1.75 " 1.85
No. 4 Brussels and hard back carpets	1.75 " 1.85
No. 5A Roofing Rags	1.75 " 1.85

New Foreign Cotton Cuttings

(Prices to Mill, F.O.B. Dock, N. Y.)

	Per 100 lbs.
New Dark Cuttings	$5.50 to $5.75
New Mixed Cuttings	6.25 " 6.50
Light Silesias	9.25 " 9.50
Light Flannelettes	9.25 " 9.50
New White Cuttings	12.00 " 13.00
New Unbleached Cuttings	12.25 " 13.00
Fancy Shirt Cuttings	6.50 " 7.00
Light Prints	7.75 " 8.00
Bleachable Khaki, No. 1	7.00 " 7.50
Unbl. Khaki, No. 1	6.25 " 6.75

Old Foreign Rags

(Prices to Mill, f.o.b. dock, N.Y.)

	Per 100 lbs.
No. 1 White Linens	$14.00 to 16.00
No. 2 White Linens	12.00 " 13.00
No. 3 White Linens	8.00 " 9.00
No. 4 White Linens	8.00 " 9.00
No. 1 White Cottons	8.00 " 10.00
No. 2 White Cottons	7.00 " 8.00
No. 3 White Cottons	6.00 " 6.50
No. 4 White Cottons	4.00 " 4.50
Extra Light Prints	6.50 " 7.00
Old Light Prints	4.50 " 5.00
Med. Light Prints	4.00 " 4.50
Dutch Blue Cottons	5.25 " 5.50
Checks and Blues	4.00 " 4.25
Linsey Garments	2.60 " 2.75
Dark Cottons, European	2.50 " 2.60
Dark Cottons, Egyptian	3.00 " 3.25
Old Shopperies	2.20 " 2.30
New Shopperies	2.40 " 2.50

Bagging

(Prices to Mill, f.o.b. N. Y.)

	Per 100 lbs
Foreign Gunny, No.1	$6.00 to $6.50
Domestic Gunny, No. 1	6.25 " 6.50
Light Wool Tares	6.25 " 6.50
Heavy Wool Tares	6.00 " 6.25
No. 1 Scrap Bagging	5.50 " 5.75
Roofing Bagging	2.00 " 2.25
Foreign Manila Rope	6.00 " 6.75
Domestic Manila Rope	6.50 " 6.75
Jute Strings	5.00 " 5.25
No. 1 Sisal Strings	5.25 " 5.50
Mixed Strings	1.75 " 2.50

Waste Paper

Base Prices to Mills for Average Packings

(Dollars Per Ton)
F.o.b. New York, Baled

No. 1 Hard White Envelope Cuts, one cut	155.00 to 165.00
No. 1 Hard White Envelope Cuts	145.00 " 155.00
No. 1 Hard White Shavings, unruled	145.00 " 155.00
No. 1 Hard White Shavings, ruled	110.00 " 120.00
Soft White Shavings, one cut	145.00 " 155.00
No. 1 Soft White Shavings	135.00 " 145.00
Soft White Shavings, Misc.	125.00 " 135.00
No. 1 Fly Leaf Shavings	45.00 " —
No. 1 Groundwood Fly Leaf Shaving	35.00 " —
No. 1 Heavy Books & Magazines	27.00 " —
Mixed Books	15.00 " 20.00
No. 1 White Ledger	85.00 " 90.00
Manila Tab. Cards	9.50 " 11.00
New Manila Envelope Cuttings, one cut	100.00 " 110.00
New Manila Envelope Cuttings	65.00 " 75.00
Extra Manilas	25.00 " 30.00
Mixed Kraft, Env. & Bag Cuttings	75.00 " 85.00
Kraft Envelope Cuttings	110.00 " —
Triple Sorted, No. 1 Brown Soft Kraft	65.00 " 75.00
New Kraft Corrugated Cuttings	80.00 " 85.00
No. 1 Assorted Old Kraft	55.00 " 60.00
New Jute Corrugated Cuttings	27.00 " —
Old 100% Kraft Corrugated Containers	45.00 " 50.00
No. 1 News	20.00 " 21.00
No. 1 Mixed Paper	11.00 " 13.00
Box Board Cuttings	— " —
White Blank News	75.00 " 85.00
Overissue News	23.00 " 24.00
Old Corrugated	26.00 " 28.00
Mill Wrappers	22.00 " 24.00

Twines

All Prices Nominal, F.o.b. Mill

(Soft Fiber)

Coarse Polished—	
India	.33¼ to .35
Fine India	.38¼ " .42½
Fine Polished—	
Unpolished—	
Paper Makers	.28¼ " .30½
Tube Rope	.29 " .31½
Wrapping	.32 " .35½
Cotton	.63¼ " .66¾

(Hard Fiber)

Mex. Sisal	.21 " .27
Manila (Reprocessed)	.30 " .32

(American Hemp)

Polished Hemp	.36¾ " .60
Unpolished	.32¼ " .54

PHILADELPHIA

Domestic Rags (New)

(F.O.B. Eastern Shipping Point)

Shirt Cuttings—	
New White No. 1	.11 to .12
New White No. 2	nominal
Light Silesias	.07½ " .08
Black Silesias, soft	.06½ " .07
New Unbleached	.10½ " .11¼
Washable Prints	.06½ " .07
Washable No. 1	.05 " .05½
Blue Overall	.07½ " .08
Cottons—According to grades—	
Washable Shredding	.03½ " .04
Fancy Percales	.06¾ " .07¼
New Black Soft	nominal
Khaki Cuttings—	
Unbleachable Cotton Cuttings	.06 " .06½
Bleachable Cotton Cuttings	.07 " .07½
Men's Corduroy	.05½ " .06
Ladies' Corduroy	.05 " .05½
Cottonades	.05½ " .06

Domestic Rags (Old)

(F.O.B. Eastern Shipping Point)

White No. 1—Repacked	4.50 to 5.00
Mixed White	4.00 " 4.25
White No. 2—Repacked	3.50 " 3.75
Thirds and Blues—	
Miscellaneous	2.25 " 2.50
Repacked	2.75 " 3.00
Roofing Stock—	
Foreign No. 1	nominal
Domestic No. 1	1.85 " 1.90
Domestic No. 2	1.75 " 1.80
Roofing Bagging	1.65 " 1.70
Old Manila Rope	6.25 " 6.50

Bagging

(F.O.B. Eastern Shipping Point)

Gunny No. 1—	
Foreign	nominal
Domestic	4.75 to 5.25
No. 1 Clean Bright—	
Sisal Strings	.04½ " .05
No. 2 Clean Bright—	
Sisal Strings	.03½ " .04
Sisal Jute	.02¾ " .03
Scrap—	
No. 1	5.00 " 5.50
No. 2	2.50 " 3.00

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It makes paper BETTER because by eliminating bacterial spots and off-odors it improves quality—obviously essential in food papers.

It makes paper FASTER because it reduces down-time due to sheet breakage, prevents the formation of slime in felts and improves water removal.

And, finally, it makes paper CHEAPER because it reduces stock, chemical and heat losses, improves grade and saves labor.

Write today to learn more about why leading paper and board mills everywhere have turned to W & T Chlorinators to solve bacteria-induced paper-making problems.

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NEWARK 1, NEW JERSEY • REPRESENTED IN PRINCIPAL CITIES

1-12

Wool Tares, heavy	4.75	"	5.00
New Burlap Cuttings	6.00	"	6.50

Old Papers

(F. o. b. Phila.)
Mill Prices, Baled

No. 1 Hard White Envelope Cuts, one cut	$100.00	to	$115.00
No. 1 Hard White Shavings, unruled	100.00	"	—
Soft White Shavings, one cut	90.00	"	95.00
White Blank News	70.00	"	75.00
Soft White Shavings	80.00	"	—
No. 1 White Ledger	85.00	"	90.00
Ledger, Colored	70.00	"	72.00
No. 1 Heavy Books & Magazines	24.00	"	26.00
Overissue Magazines	nominal		
New Manila Envelope Cuttings	80.00	"	—
No. 1 Assorted Old Kraft	60.00	"	65.00
No. 1 Mixed Paper	11.00	"	12.00
Box Board Cuttings	10.00	"	11.00
Kraft Corrugated Cuttings	90.00	"	100.00
Old Corrugated	24.00	"	26.00
Overissue News	20.00	"	22.00
No. 1 News	13.00	"	15.00

BOSTON

Old Papers

(F.o.b. Boston)
Mill Prices, Baled

No. 1 Hard White Shavings, unruled	6.25	to	6.75
No. 1 Hard White Shavings, ruled	6.00	"	6.50
Soft White Shavings, Misc.	5.25	"	5.50
No. 1 Fly Leaf Shavings	1.75	"	1.85
No. 2 Fly Leaf Shavings	1.65	"	1.75
No. 1 Groundwood Fly Leaf Shavings	1.75	"	2.00
No. 2 Groundwood Fly Leaf Shavings	1.50	"	1.75
Mixed Colored Shavings	2.00	"	2.25
New Manila Envelope Cuts, one cut	4.50	"	4.75
Hard White Envelope Cuts, one cut	6.00	"	6.50
Triple Sorted No. 1 Brown Soft Kraft	3.75	"	4.00
Mixed Kraft Env. & Bag Cuttings	4.00	"	4.25
Kraft Envelope Cuttings	3.75	"	4.00
No. 1 Heavy Books & Magazines	1.25	"	1.75
New Manila Envelope Cuttings, one cut	—	"	—
New Manila Envelope Cuttings	4.00	"	4.25
White and Colored Tabulating Cards	4.00	"	4.50
Groundwood Tabulating Cards	1.50	"	1.75
White Blank News	2.25	"	2.50
No. 1 Assorted Old Kraft	3.50	"	—
No. 1 Mixed Paper	.65	"	.75
Overissue News	1.00	"	1.25
Box Board Cuttings	.60	"	.70
New Corrugated Cuttings, Kraft	2.75	"	3.00
Old Kraft Corrugated Containers	1.75	"	—
Old Corrugated Containers	1.25	"	1.30
Jute Corrugated Cuttings	1.07½	"	—
Paper Strings	2.00	"	2.25

Bagging

(F. o. b. Boston)

Gunny Bagging—			
Foreign	—	to	4.75
Domestic	—	"	4.75
Sisal Rope No. 1	6.00	"	—
Sisal Rope No. 2	5.50	"	—
Mixed Rope	5.25	"	—
Mixed Strings	3.00	"	3.50
Transmission Rope—			
Foreign	(nominal)		
Domestic	3.00	"	3.50
Manila Rope—			
Foreign	(nominal)		
Domestic	6.25	"	—
Soft Jute Rope	5.00	"	5.25
Jute Carpet Threads	6.00	"	—
Bleachery Burlap	8.50	"	9.00
Scrap Burlap—			
Foreign	—	"	4.75
Domestic	—	"	4.87½
South America	5.25	"	—
Wool Tares—			
Foreign	4.75	"	—
Domestic	4.75	"	—
Aust. Wool Pouches	5.00	"	5.25
New Zealand Wool Pouches	5.25	"	5.50
New Burlap Cuttings	6.00	"	6.50
Heavy Baling Bagging	5.25	"	5.75
Paper Mill Bagging	3.50	"	3.75
No. 1 Roofing Bagging	1.75	"	—

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New Light Prints	.08	to	—
Fancy Percales	.07½	"	.08
New White No. 1	.11	"	.11½
New Light Flannelettes	.08	"	.08½
Canton Flannels, Bleached	.10	"	.11
Underwear Cutters, Bleached	.10	"	.11
Underwear Cutters, Unbleached	.11	"	.12
Silesias No. 1	.08	"	.08½
New Black Silesias	.05	"	—
Red Cotton Cuttings	.05	"	—
Blue Overalls	.08½	"	.09
Soft Unbleached	.11	"	.12
Blue Cheviots	.08½	"	.09
Fancy	.50	"	—
Washable	.06	"	—
Khaki Cuttings	.06½	"	.07½
Corduroy	.03½	"	—
Khaki Canvas	.06½	"	.06½
B. V. D. Cuttings	.10½	"	.11½

Domestic Rags (Old)

(F. o. b. Boston)

White No. 1—			
Repacked	3.80	to	—
Miscellaneous	3.20	"	—
White No. 2—			
Miscellaneous	2.65	"	—
Twos and Blues, Repacked	2.20	"	—
Old Blue Overalls	2.25	"	2.50
Thirds and Blues,			
Repacked	2.20	"	—
Miscellaneous	1.80	"	—
Black Stockings	3.50	"	4.00
Roofing Stock—			
No. 1	2.00	"	—
No. 2	1.75	"	2.00
No. 3	1.35	"	—
No. 4	1.35	"	—
No. 5, Quality A	1.35	"	—
Quality B	1.20	"	—
Quality C	.95	"	—
Old Manila Rope	6.00	"	—

Foreign Rags

(F. o. b. Boston)

Canvas	(nominal)
Dark Cottons	(nominal)
Dutch Blues	(nominal)
New Checks and Blues	(nominal)
Old Fustians	(nominal)
Old Linsey Garments	(nominal)
New Silesias	(nominal)

CHICAGO

Waste Paper

(F. o. b. Chicago)
Mill Prices, Baled

Shavings—			
No. 1 Hard White Envelope Cuts, one cut	$150.00	to	—
No. 1 Hard White Shavings, unruled	140.00	"	—
No. 1 Soft White Shavings	120.00	"	—
No. 1 White Ledger	95.00	to	—
No. 1 Heavy Books & Magazines	30.00	"	35.00
White Blank News	80.00	"	85.00
Mixed Kraft Env. & Bag Cuttings	80.00	"	90.00
No. 1 Assorted Old Kraft	35.00	"	—
Overissue News	27.00	"	—
No. 1 News	23.00	"	—
No. 1 Mixed Paper	15.00	"	—
Old Corrugated	25.00	"	—
Mill Wrappers	16.00	"	—

MARKETS

BLANC FIXE — Market unchanged. Prices firm. Demand heavy. Pulp is currently quoted at $85 in bags, car lots at works, 6 cents per lb., l.c.l., deld.; by-product $75 per ton, car lots at works, 6 cents per lb., l.c.l., deld.

BLEACHING POWDER—Market near a balance. Supply improves. Prices range from $3.75 to $4 per 100 pound drums, l.c.l., works.

CASEIN—Market weakened with price off slightly. Domestic production unsettled. Buying slow. Current prices on processed acid precipitated casein at 33 to 35 cents per pound for domestic grades and 28½ to 30 cents for imported grades, f.o.b. shipping point.

CAUSTIC SODA — No improvement in supply. Tank car shortage critical. Solid caustic is reported at $2.85 per cwt.; flaked and ground is quoted at $3.25 per cwt. in 400 pound drums, $3.75 per cwt. in 100 pound drums—car lots at works; liquid 50 percent in tank cars at $2.25 per cwt.; liquid 73 percent in tank cars at $2.35 per cwt. at works.

CHINA CLAY—Domestic grades in good supply. Filled is $9 to $11.50 per ton, car lots; coating clay is $14 to $22. Imported clay quotation, short tons, $16 to $35, export warehouse. Supply improved.

CHLORINE—Supply condition slightly eased. Deliveries restricted by slow rolling of tank cars. Prices unchanged. Currently quoted at $2.25 per cwt. in single unit tank cars, at $2.55 to $3.75 per cwt. multi-unit tank cars, f.o.b. works.

ROSIN—Supply tight. Prices dip. Good producing season forecast. Gum rosin in drums per 100 pounds net in yard. New York car lots. B, $9.55; D, $9.80; E, $10.05; F, G, H, $10.30; K, M, N, $10.50; WG, $10.70; WW, $10.80; wood rosin, per 100 pounds, net, f.o.b., l.c.l., N. Y., B, $6.45; FF, $7.95; G, H, I, K, $10.20; M, $10.25; N, $10.64; WG, $10.95; WW, $11.08; X, $11.18.

SALT CAKE — Demand continues ahead of supply with slight improvement in shipments. Prices unchanged. Weather hampers shipping. Domestic salt cake is quoted at $20 to $26.

SODA ASH—No box cars available for bulk shipments. Shipments only against contracts. Current prices, car lots, per 100 pounds: in bulk, $1.10; in paper bags, $1.30; and in barrels, $1.70.

SODIUM BICARBONATE — Supply approximately abreast the demand. Shortage of box cars delays shipment. Reported as $1.85 per cwt. paper bags, carload lots.

Experienced

MANAGER or ASSISTANT MGR. WANTED

for large multiple-machine paper board mill located on Pacific Coast. Grades of board run are container liner and corrugating medium, plain chip and folding grades. Age 30-42. Send full particulars and photo.

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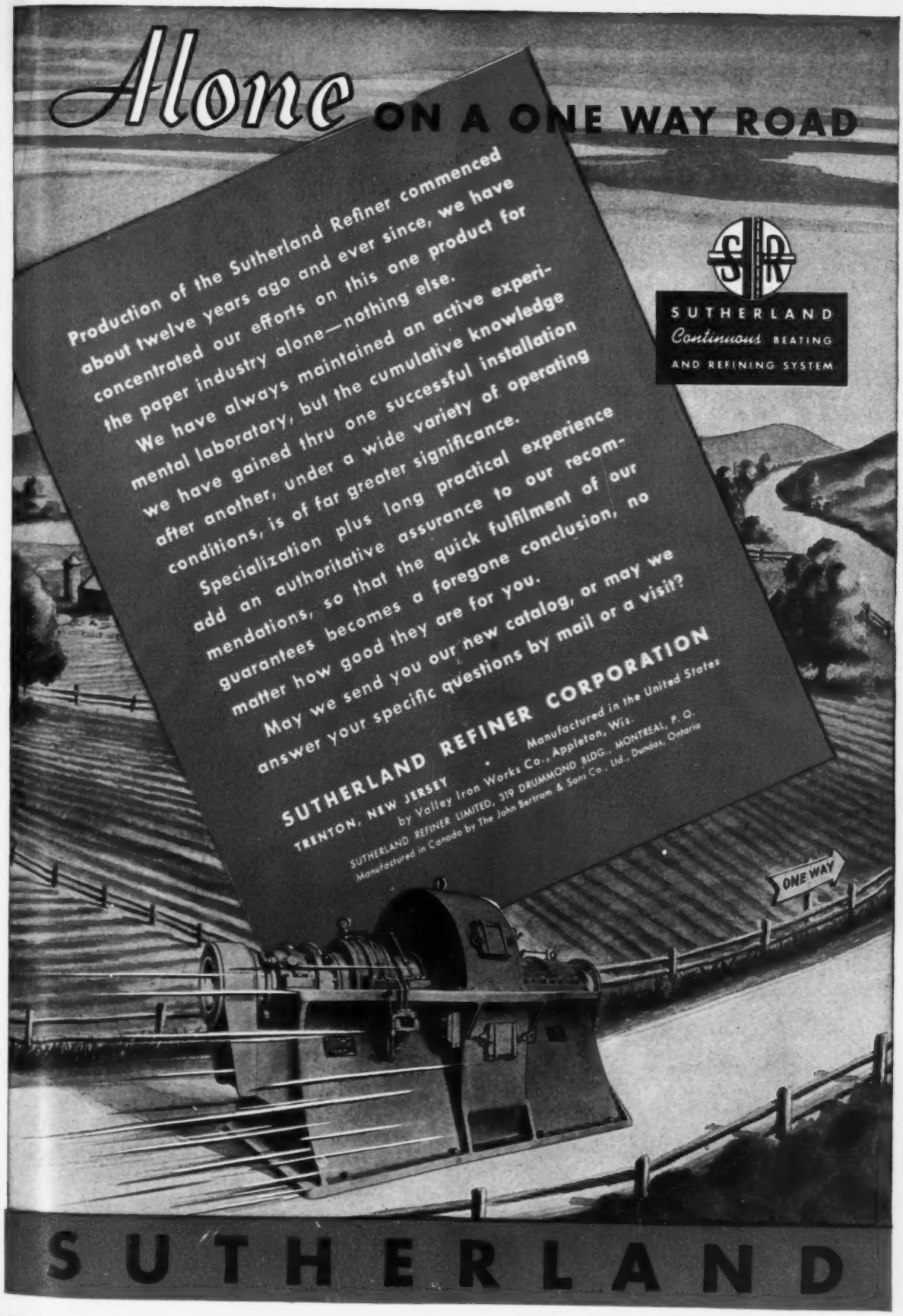
Paper Trade Journal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ONE WAY
SUTHERLAND

DIGESTED

Times have changed. For example in 1944 we talked about a full employment economy at a national income of $140 billion. We spent a long time discussing what we thought this country should do to guard against unemployment, against depression, and what we could do to prepare for full and continuing employment under a peacetime economy with the unheard-of income of $140 billion.

Since 1944 the income has shot up. William Clayton today talked to us about a national income of $230 billion a year. Some people say we have inflation. Some say we have "good times." A good many people are saying we should "do something," but few have come up with an acceptable answer of what to do.—*H. Christian Sonne, Chairman of the Board, at a meeting of the National Planning Association.*

To get our people back on the track, to have them rededicate themselves to America, to stiffen their resistance to the lures, attractions and illusory promises of those who would do away with our system is not a simple problem. We, of Johns-Manville, have recognized this problem many years. In our own small way we have tried to explain the American system to our employees, to our stockholders, to our customers, and to the public. —*Lewis H. Brown, President, Johns-Manville Corp.*

Production Ratio Report*

(Production as per cent of six-day capacity)

COMPARATIVE WEEKLY SUMMARIES

Current Weeks—1948		Corresponding Weeks—1947	
January 17	99.9	January 18	103.8
January 24	101.1	January 25	103.7
January 31	103.6	February 1	104.0
February 7	99.2	February 8	106.2
February 14 (Revised)	100.5	February 15	104.5
February 21	*99.4*	February 22	105.9

COMPARATIVE MONTHLY SUMMARIES

1947							
Jan.	102.1	Apr.	105.1	Aug.	104.2	Dec.	101.5
Feb.	105.9	May	106.2	Sept.	102.0	Year Avg.	104.3
Mar.	106.1	June	106.0	Oct.	109.5	1948	
		July	93.5	Nov.	109.3	Jan.	*100.9*

COMPARATIVE YEARLY SUMMARIES

	1941	1942	1943	1944	1945	1946	1947	1948
Year to Date	87.4	104.2	88.0	88.6	87.8	95.6	104.7	*100.4*
Year Average	97.4	90.4	87.8	88.1	89.4	101.1	104.3	

Note: *As of January 10 capacity base increased by 13.3%.*

PAPERBOARD OPERATING RATIOS†

Current Weeks—1948		Corresponding Weeks—1947	
January 17	104	January 18	103
January 24	104	January 25	101
January 31	103	February 1	102
February 7	100	February 8	104
February 14	101	February 15	102
February 21	*99*	February 22	103

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.	Year Avg.
1947	99	103	101	100	101	101	90	99	96	101	99	89	98
1948	*99*												

* Based on tonnage reported to American Paper and Pulp Association. Does not include mills reporting to National Paperboard Association, except in isolated cases where both paper and paperboard are produced and separate tonnage figures are not readily available. Does not include mills producing newsprint exclusively.

† Per cents of operation based on "Inch-Hours" reported to the National Paperboard Association.

EDITORIAL

Paper From Straw

More than a common amount of interest attaches to news from the paper convention last week that a way has been found to produce from wheat straw a pulp that may be used in the production of fine papers. The disclosure was made at the TAPPI convention as a report from the Agricultural Residues Division of the United States Department of Agriculture's Research Laboratory at Peoria. As a laboratory report the disclosure was of high interest. But it becomes arresting in its attention-compelling power when figures are adduced to show that 95 million tons of wheat straw were produced last year in this country, and that from this quantity the straw that was burned and wasted might have produced 20 million tons of pulp.

That straw has not been used in this country for making fine papers is due both to economic and technological limitations. The Peoria process produces yields of 50 percent of screened, bleached pulp. This is 5 to 10 percent higher than other processes operating on straw or most processes using wood. The cost of procuring clean straw has been a stumbling block in the past. Members of the strawboard industry and manufacturers of farm equipment have met at the Peoria Laboratory to perfect better methods and means for securing clean dry straw at lower costs. Cooperative studies have also been undertaken jointly by the strawboard industry, chemical fungicide manufacturers, and the Peoria Laboratory to cut down fiber losses in storage of straw and improve its quality. Real progress in economic procurement and preservation of straw has resulted.

Dr. E. C. Lathrop and S. I. Aronovsky, who direct these studies do not recommend this straw pulp for use alone in making papers. The properties of this pulp seem unique; the pulp tests better in physical properties than soda pulps from any of the hard woods and is the equal, excepting in tearing strength, of soft wood sulfite pulps. The pulp is excellent for producing well formed papers, and hydrates easily. These engineers, therefore, believe that this fine pulp should find its logical use as a blend with any of several different kinds of wood pulp to produce fine papers, such as magazine, book, writing, litho, off-set, certain grades of waxing tag, bristol, and other specialties.

The process is now said to be ready for mill-scale trials. The technological soundness of this process is demonstrated by the fact that Dutch paper engineers, to whom this process was suggested, are declared to be using it successfully on a commercial scale in Holland, where straw is the main raw material for paper.

Paper and paper board are in short supply and prices of these products have risen sharply. This is due to short supply of pulp-wood; pulp-wood species are being used faster than grown; and Canada is drastically limiting pulpwood exports to the United States. About 25 Mills in the Middle West produce annually 500,000 tons of strawboard for the container industry from wheat straw.

A number of domestic paper companies are disclosed as expressing some interest in the process. Dr. Howard says that the Bureau and the Laboratory stand ready to assist industry in any way in the use of straw as a pulp source. More work may be required to make straw fully competitive with pulp wood. It is produced every year in almost all regions; it is a valuable and yet a largely wasted national resource. The cooperation of industry, the farmer, and the agricultural engineers is needed to help solve this national problem.

Ships Into Breakwaters

The ancient phrase about turning swords into plowshares has changed, along with other improvements that have accompanied civilization, and both the weapons and the peaceful end use have been modernized. That is to be inferred from news of the Pacific Coast where battleships and cargo boats are finding an equally vital field of service in their final uses by the pulp industry.

Concrete ships built during the war will at least serve a successful purpose in acting as a breakwater for the Powell River Company at the pulp and paper town of Powell River, B. C. These concrete oceanic freighters will, in their final use, find distinctive company for they will join two former United States cruisers, the Charleston and Huron, which were dismantled after the first World War and purchased by the Powell River company, and the old and famous British Columbia fisheries patrol vessel, Malaspina, which was bought for a similar purpose. First of the four ferro-concrete vessels, the 5000-ton John Smeaton has arrived at Powell River and three others are on the way.

During the war when shortage of tonnage was acute, the United Martime Commission ordered a number of concrete freighters from a shipyard at Tampa, Florida. Similar ships had been built during the First Great War, and had proved impracticable, but the project was revived, despite the knowledge that the ships would cost more to build than welded steel ships and would be of doubtful value in post-war trading.

The concrete ships proved a failure and were sold by the Maritime Commission at fraction of their cost.

Dismanteled of all equipment, the ships will be sunk to extend the present breakwater around the Powell River Company's log storage pond.

W. L. Cook

Editor

7 Profit-Makers...

will your new equipment have them?

With paper-making machinery operating on round-the-clock schedules, your profit curve often is determined by your processing equipment. Here ARMCO Stainless Steels give you these "Big 7" manufacturing and selling advantages. Check them:

1 Fewer Clean-Ups

Less production time is lost in "clean-ups." Only a hose and water under pressure are needed to clean stainless equipment.

2 Less Slime

Slime-producing bacteria have a tough time "feeding" on the smooth surface of ARMCO Stainless. There's no place for a foothold.

3 Less Breakage

Reducing slime means fewer "weak spots." Paper breakage is less frequent when you use stainless steel equipment.

4 No Chemical Reactions

There is no trouble from chemical reactions. ARMCO Stainless Steel resists chemicals used in bleaching work.

5 Cleaner Paper

There is no danger of pulp contamination from cement, wood or other substances. ARMCO Stainless assures a uniformly high yield of cleaner, more salable paper.

6 Greater Output

You get greater output with fewer units. Production increases, shutdowns are fewer because little time is lost cleaning stainless.

7 Longer Service

ARMCO Stainless assures longer service life of processing equipment. Ask your fabricator how it lengthens service life because of its excellent corrosion resistance.

See how you can increase production and profits in your mill with equipment made of ARMCO Stainless Steels. Get in touch with your equipment fabricator, or write us. Just address The American Rolling Mill Company, 213 Curtis Street, Middletown, Ohio.

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SECTION OF THE

TECHNICAL ASSOCIATION
OF THE PULP AND PAPER INDUSTRY

122 E. 42nd ST., NEW YORK 17, N. Y. Edited By R. G. MACDONALD, Secretary

Consistency Control*

By L. D. McGlothlin[1]

Abstract

The development and application of a controller for lowering and regulating the consistency of kraft stock from blow tank to vacuum washers by measuring the mechanical resistance electrically and transferring to a balancing controller with adjustable control index is given.

One of the first prerequisites of good, efficient washing on vacuum washers is the maintenance of uniform sheet or cake thickness on the drum filters—this can only be accomplished with good pumping equipment and consistency control.

For the best results a pump with a large diameter impeller and slow speed motor, preferably variable speed, should be used to pump only the desired amount of stock without overflow back to the blow tank or without valve throttling.

The stock coming from the digesters usually has a consistency of about 15% and is very free. It is the practice to add weak liquor to the stock at this stage to reduce the consistency so that it may be properly handled by the pumps and delivered to the washers.

Prior to pumping, it is necessary to provide consistency control which will be highly sensitive to change and will operate automatically and efficiently to maintain a uniform predetermined consistency in the stock preparatory to its being pumped to the washers.

The following brief description and Fig. 1 will explain an effective means of consistency control:

Description of Unit

The device includes a closed main tank, with inlet at the bottom and outlet at the top through which the stock flows to the pump. The black liquor for dilution is delivered into the tank through several inlet branch pipes from a main header. These branch inlet pipes connect with the tank at different levels and each inlet pipe is controlled by a separate hand valve, thus the incoming diluting liquor can be distributed in equal amounts simultaneously at different levels, as desired, or the comparative rate of distribution at different levels in the tank can be modified.

A series of baffles extend horizontally within the tank. These baffles are arranged in pairs at different horizontal levels and the corresponding baffles of each pair are arranged in vertical alignment. Thus, these baffles form two vertical rows. However, these two rows are not diametrically opposite each other. While the baffles extend in horizontal direction, the upper faces of the baffles are inclined so as to form dihedral angles with the horizontal planes in which the lower edges of the baffles lie. The inner end of each baffle is supported by a horizontal brace to the tank wall.

A vertical shaft centrally located within the tank extends upward through the top of the tank. An antifriction bearing at the top supports the weight of the shaft assembly. A plain bearing at the bottom serves merely as a guide.

At spaced intervals on the shaft within the tank, paddle blades are mounted. The paddle blades are arranged in pairs, each pair forming a horizontal cross arm on the shaft. All the blades are the same size and shape, each blade having a front face constituting a vertical plane surface.

Unlike the baffles, the respective blades of the pairs

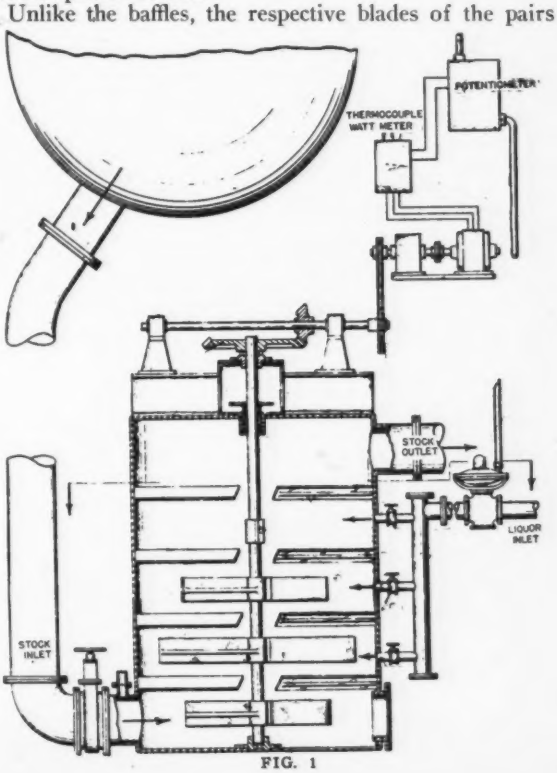

FIG. 1

* Presented at the Second Engineering Conference sponsored by the Technical Association of the Pulp and Paper Industry held at the Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Kraft Mill Superintendent, Crown Zellerbach Corp., Camas, Wash.

are not in vertical alignment, but are staggered around the shaft in vertical sequence in 45° steps. Each pair of blades is placed a short distance below a pair of stationary baffles. The upper face of the baffles are so arranged that they will engage the stock when rotated in one direction by the blades (clockwise as viewed) producing a mixing and rotary motion.

Operation

Due to the fact that the baffles of each pair are not diametrically opposite each other and to the staggered angular relationships of the different set of paddles on the shaft, no two paddle blades come into vertical alignment with any of the baffles simultaneously. This arrangement distributes the resistance to the rotation of the shaft and paddles evenly throughout each complete revolution. Consequently the stock will not only be mixed, but will also be moved upward from the bottom of the tank until it reaches the outlet pipe through which it is drawn by a pump. During this nixing and lifting of the stock in the tank, additional liquor is admitted to various levels and in controlled amounts to bring the stock down to the desired predetermined lower consistency.

The shaft, with paddles attached, is rotated from a motor through a chin of gears or gear motor, the motor being only of sufficient horsepower to drive the mechanism operating at near full load.

The electric power for operating the motor used to rotate the paddles in the tank is delivered through a thermocouple watt meter, which serves to convert wattage to milli-voltage. This in turn actuates an automatically balancing potentiometer which operates a pilot air valve controlling a diaphragm valve throttling the dilution liquor. This valve, delivers black liquor to any or all dilution inlets for stock consistency control.

In a consistency controller it is advantageous to keep dilution at the point of control to a minimum. The dilution from the blow tank to the washers is about five-fold. While the controller will handle this degree of dilution automatically, it has been found desirable and practical to reduce the load on the motor by diluting about one-half way in the blow tank with manual control. This makes the automatic control more sensitive and the diluted stock more uniform in consistency.

Douglas fir stock presents a problem in foam control. It may not compare with Southern pine in this respect, but still every reasonable precaution must be exercised. As any operator in a mill using pine knows, entrainment of air in the system must be avoided, and whipping of the stock as in a small high speed pump will create a problem. This controller being totally enclosed and under pressure cannot add air to the stock, and the movement of the paddles being slow will not whip up foam from any air that may already be in the stock.

Further mechanical advantages of the tank in the line are—first, it will act as a trap for tramp iron which can be removed at periodic shut-downs; and second, the tank being totally enclosed may be easily kept clean and cannot cause overflow.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

C. Everton Cass, Central Plant Layout Supervisor, Marathon Corporation, Menasha, Wisconsin.

Carl A. Emerson, Field Engineer, John B. Foley Co., Syracuse, New York, a 1947 graduate of Clarkson College of Technology.

Harold S. Mumford, Plant Chemist, Colgate-Palmolive-Peet Co., Berkeley, California, a 1928 graduate of Willamette University.

Edward J. Sullivan, Salesman and Sales Service Engineer, Oxford Paper Co., New York, New York. Attended Boston University.

Paul O. Vogt, Design Engineer, General Electric Company, Schenectady, New York.

Vance L. Reynolds, Chemical Engineer, Puget Sound Pulp & Timber Co., Bellingham, Washington, a 1945 graduate of the University of Kansas.

William Kurlish, Sales Engineer, General Electric Co., Philadelphia, Pennsylvania, a 1947 graduate of the University of Pennsylvania.

Gustaf A. Peterson, Assistant Sales Manager, Rice Barton Corp., Worcester, Massachusetts.

F. Leslie Toof, Head, Packaging Section, Pillsbury Mills, Inc., Minneapolis, Minnesota, a 1931 graduate of Clarkson College of Technology.

H. Van der Raay, Plant Engineer, South African Pulp & Paper Industries, Ltd., Enstra, South Africa, a 1925 graduate of Middlebaar Technical School, Amsterdam.

Clara VanSant, Reference Librarian, Tacoma Public Library, Tacoma, Washington, a 1916 graduate of Columbia University with an A.M. degree.

LeRoy P. Wahl, Group Leader, Archer Daniels Midland Co., Minneapolis, Minnesota.

William M. Wooding, Research Chemist, American Cyanamid Co., Stamford, Connecticut. He is attending Polytechnic Institute of Brooklyn.

Sidney Hausman, formerly consulting engineer, is now vice president, Apex Machine Mfg. Corporation, 53 E. 10th Street, New York, N. Y.

Fred B. Snyder, Metallurgist, Babcock & Wilcox Co., Alliance, Ohio, a 1942 graduate of Wooster College.

Henry E. Walter, Superintendent, Wood Conversion Co., Cloquet, Minnesota, a 1927 graduate of the University of North Dakota.

Benjamin M. G. Zwicker, Technical Manager, B. F. Goodrich Chemical Co., Cleveland, Ohio, a 1935 graduate of Whitman College, with a Ph.D. degree from the University of Washington in 1940.

Paul E. Truttschel, Research Chemist, Appleton Coated Paper Co., Appleton, Wisconsin, a 1940 graduate of Marquette University.

John W. Wendell, Jr., Assistant Mill Chemist, Tileston & Hollingsworth Co., Hyde Park, Massachusetts, a 1940 graduate of Harvard University.

Christopher C. Wright, Board Mill Superintendent, Minas Basin Pulp & Power Co. Ltd., Hantsport, N. S., Canada.

Thaddeus R. Zegree, Senior Research Chemist, Crown-Zellerbach Corp., Camas, Washington, a 1937 graduate of Ecole Francaise de Papeterie, Grenoble, France.

Harold R. Rogers, Engineer, Union Corporation Ltd., Johannesburg, South Africa, a 1928 graduate of Krugersdorp College.

Stanley R. Sheeran, Technical Sales Representative, E. I. duPont deNemours & Co., Wilmington, Delaware, a 1941 graduate of the University of Notre Dame with a Ph.D. degree.

James E. Shepard, Sales Engineer, Brown Instrument Div., Minneapolis-Honeywell Regulator Co., Syracuse, New York, a 1931 graduate of the Rochester Institute of Technology.

Harold A. Sholl, Jr., Paper Industry Engineer, The Brown Instrument Div., Minneapolis-Honeywell Regulator Co., Philadelphia, Pennsylvania, a graduate of the Drexel Institute of Technology with an M. E. degree.

Short Circuit Analysis of a 40,000 KVA, 2300 Volt Power System on an "A. C. Network Calculator"*

By E. L. Cowan[1] and W. V. Knight[2]

Abstract

This paper outlines in simple terms the factors that contribute to the magnitude of short circuit currents, and also how reactors are used to limit short circuit currents. A brief description is given of an A. C. Network Calculator and how it was used in making a study of a 40,000 kva. 2300-volt distribution system.

The rapid expansion of the power system in Gaylord Container Corporation's Bogalusa Mill over the past few years has presented many problems in the distribution system; such as proper selection of new generator voltages, proper type of cables, proper selection of circuit breaker arrangements, feeders, and buses to insure flexibility and continuity of services.

Regardless of the thoroughness of design, construction, and maintenance, the electric system will occasionally be subjected to faults or short circuits. When this occurs the currents in the parts of the circuit between the power source and the fault locations rise to many times their normal values. It is vital that such faults be isolated from the system and that the parts not directly involved be essentially undamaged by the fault. This is the function of the circuit breakers, and in order to select breakers of proper size and type, it is necessary to have an accurate knowledge of the magnitude of the fault currents.

This paper will deal primarily with the method used to obtain the magnitude of fault currents throughout a distribution system. There are two ways of obtaining this information: (1) the information could be calculated by a rather long and complicated procedure or (2) the distribution system could be set up in actual miniature replica on an A. C. Network Calculating Board and the results tabulated from readings made on indicating instruments. In this case, the use of the calculating board was decided upon because of the complexity of the power system and the impracticable mathematical calculations necessary to obtain all the information needed.

The information required from the calculating board study was:

(1) Determination of maximum short circuit values for circuit breaker interrupting duties under future operating conditions with the addition of a new turbine generator, synchronous motors and induction motors.

(2) Bus voltage during short circuit at a point remote from fault location to give a measure of system performance under fault conditions, such as dropping of important motor loads, motor driven generators, exciters, etc.

(3) Studying voltage at various loads with alternate methods of handling load; that is, with a turbine out of service, emergency lines in operation, and reactors shunted by breaker to tie bus sections together.

(4) Information necessary to coordinate relaying and protective equipment.

The study of the short circuit values was the most important in this case study. This was due to the large

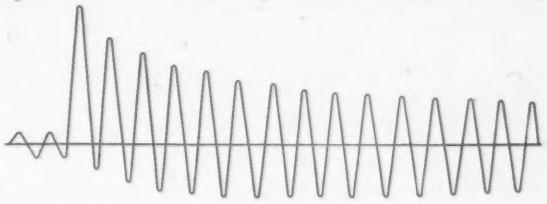

FIG. 1
Typical short circuit current secured from a generator

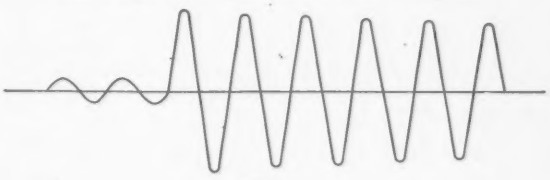

FIG. 2
Typical short circuit secured from a synchronous motor

FIG. 3
Typical short circuit current secured from an induction motor

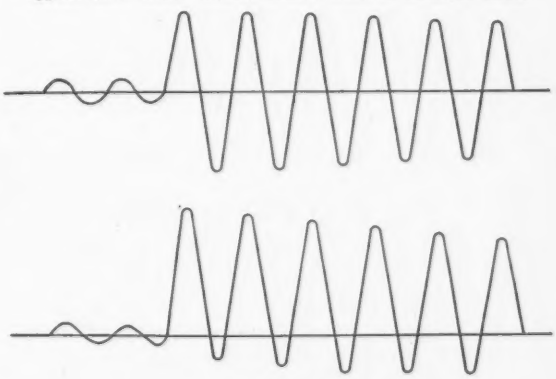

FIG. 4
Symmetrical & Unsymmetrical short circuit current

* Presented at the Second Engineering Conference sponsored by The Technical Association of the Pulp and Paper Industry held at The Bellevue-Stratford, Philadelphia, Pa., Nov. 3-5, 1947.

[1] Asst. Chief Engineer, Gaylord Container Corp., Mill Division, Bogalusa, La.

[2] Chief Electrician, Gaylord Container Corp., Mill Division, Bogalusa, La.

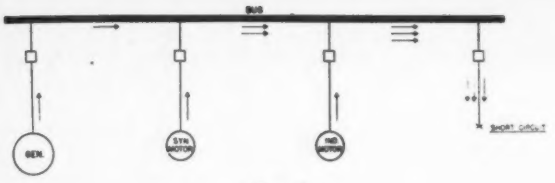

FIG. 5

All generators, synchronous motors & induction motors produce short circuit current

amount of existing equipment in service and the relative low voltage of 2300 volts for a system of 40,000 kva. To clarify the study a review of the factors that contribute to the magnitude of a short circuit may be of interest.

First to be considered is the character of the short circuit current produced by a generator, whenever a short circuit occurs.

Figure 1 shows a typical short circuit on a synchronous generator as recorded by an oscillograph.

The current shown is that in one phase of the 3-phase current. The current on the left side of the diagram is the normal full load current of the generator, and the high value on the right is the current obtained under short circuit conditions.

It is noted that the short circuit current is approximately 12 times the full load current which is typical of many generators; but in some rare cases the instantaneous short circuit current may run as high as 20 to 30 times the full load current. Considering a fault at the terminal of a generator, the initial wave of current is limited only by subtransient reactance of the generator.

The extra energy required to produce the high short circuit current does not come from more steam being admitted to the turbine but comes from the inertia of the rotating field and turbine rotor.

The major portion of the energy used in a short circuit is that necessary to supply the system losses which are quite small compared to the usual "steam" energy behind the turbine operating at normal load. Therefore, it is not the amount of energy that drives the generator that determines the magnitude of fault current. The energy stored within the rotating parts alone, neglecting the steam enregy from the turbine will produce maximum initial short circuit currents.

At the instant of sudden short circuit, the demagnetizing effect of the armature currents tends to decrease the flux linkage with the field windings. However, the flux linkages within any inductive circuit cannot be changed instantaneously but tend to remain constant. Actually, the change in these flux linkages, instead of remaining constant, follow a time period depending upon the time constant of the circuit which is the reason for the decay of armature current.

Synchronous motors are constructed similar to generators and produce short circuit currents in exactly the same manner. The enregy stored in the rotating parts of a synchronous motor is usually somewhat smaller than that of a generator, therefore, the short circuits will be correspondingly less. The amount of the short circuit current supplied, or pumped back, from a synchronous motor is dependent upon the impedance of the motor. When the voltage drops, due to the short circuit, the motor stops delivering energy to the mechanical load and starts to slow down. The inertia of the motor and load tends to drive the motor and, as a result, delivers power to the system.

Figure 2 is a typical short circuit oscillogram of the current produced by a synchronous motor.

It is noted that the ratio of the short circuit current to the full load current of the motor is about five to one.

It must be remembered that induction motors also produce short circuit current in the same manner, but the period of time that they will produce short circuit current is much less than that for generators or synchronous motors.

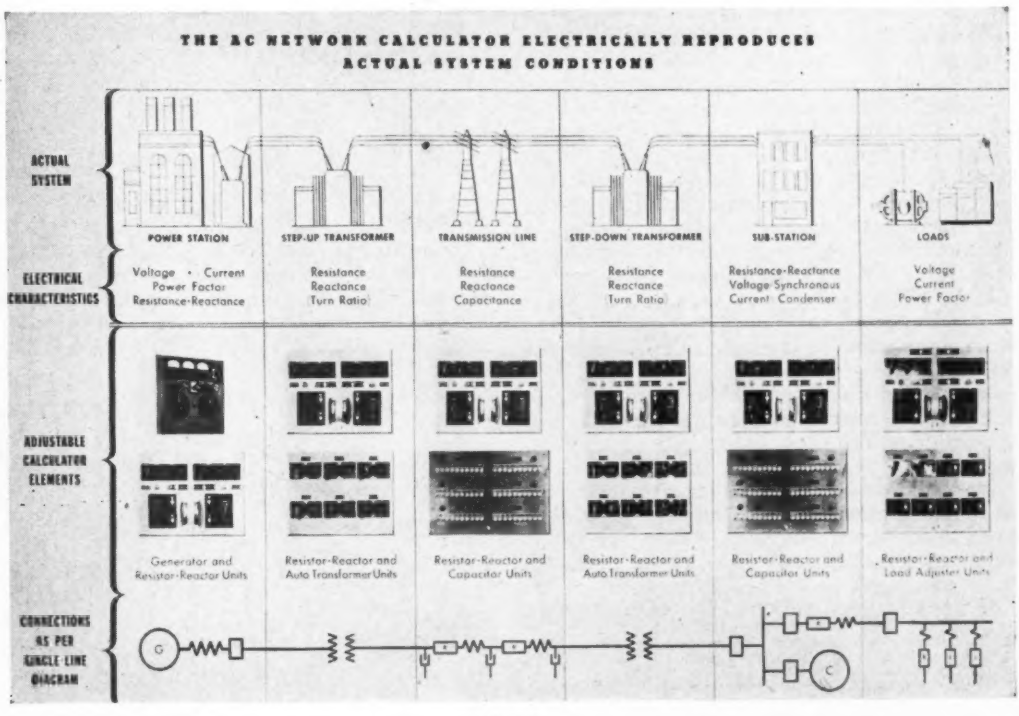

FIG. 6

FIG. 7

Figure 3 is an actual oscillogram of an induction motor operated under full load with a suddent short circuit placed on the feeder to the motor.

It is noted that the initial value of short circuit current is not quite as high as that of the synchronous motor; also that the current diminishes very rapidly, for there is not a separate source of dc. excitation, and the only flux in the rotor is that present the moment before the short circuit occurs.

In the previous diagrams, Figs. 2 and 3, the short circuit current was of equal value above and below the zero line. However, it is possible for this current to be "offset" initially and greater on one side of the zero line than the other as shown in Fig. 1.

Figure 4 shows an "offset" or unsymmetrical short circuit and also shows a symmetrical short circuit.

Whether the short circuit current is symmetrical or unsymmetrical depends on the point of the voltage wave at which the short circuit occurs. If the short circuit occurs at the peak of the voltage wave, the current is symmetrical with respect to the zero line; if the short circuit occurs at the zero point of the voltage wave, it is unsymmetrical.

If the current wave is fully unsymmetrical, its theoretical value can be 1.73 times that of symmetrical value, and since it is an even chance of the short circuit occuring at the zero point of the voltage wave, or at the peak of the voltage wave, it is necessary to take into consideration the unsymmetrical values when selecting circuit breakers.

Even though the short circuit current is initially unsymmetrical, it will normally become symmetrical in about five to ten cycles from the occurrence of the short circuit.

Air circuit breakers rated at 600 volts and below have an extremely fast interrupting time of from 1 cycle to 2 cycles, and therefore allowance must be made so that the breaker will have the ability to interrupt unsymmetrical current.

As previously mentioned, the first half cycle of current can be 1.73 times the symmetrical value. However, since the low voltage air circuit breakers open the circuit in from one to two cycles, the A.I.E.E. and the Manufacturer's recommendations are that a factor of 1.25 can be used in selecting the proper size breaker.

Whenever several generators, synchronous motors, and induction motors are connected to the same bus, as shown in Fig. 5, they will all simultaneously produce short circuit current. The total initial current is the sum of the currents produced individually by the generators, the synchronous motors, and the induction motors.

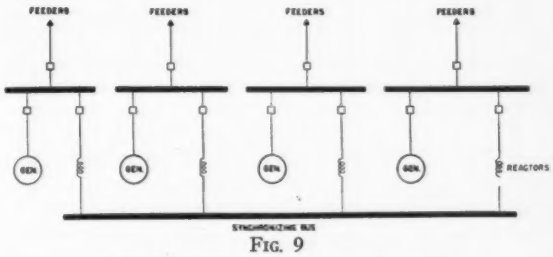

FIG. 9

Typical synchronizing bus arrangement

Therefore, in calculating the *total initial short circuit current*, it is necessary to consider the generators, as well as all motors in the mill.

Network Calculator

As mentioned before, to determine the values of the short circuit which may occur at various points in the system of the size under discussion, it is a very laborious process if an attempt is made to calculate these values

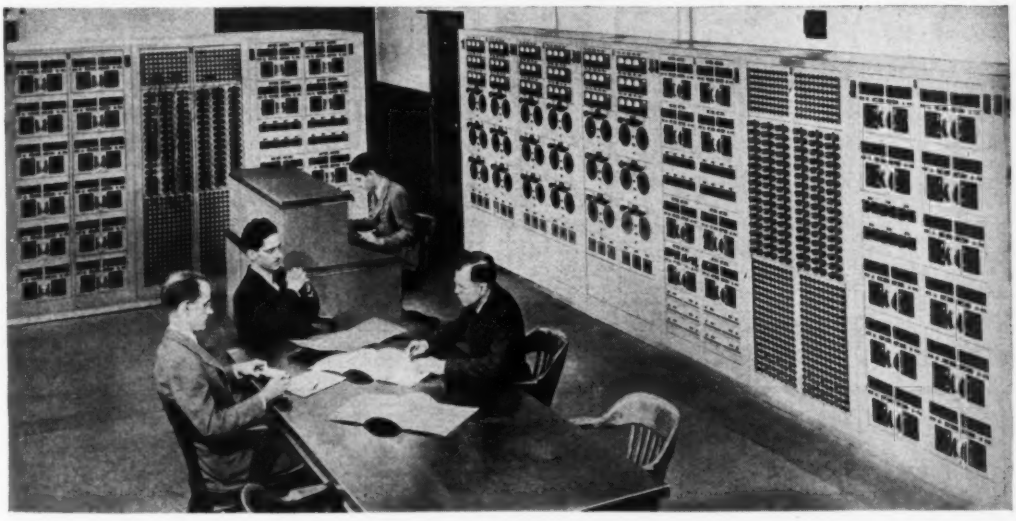

FIG. 8

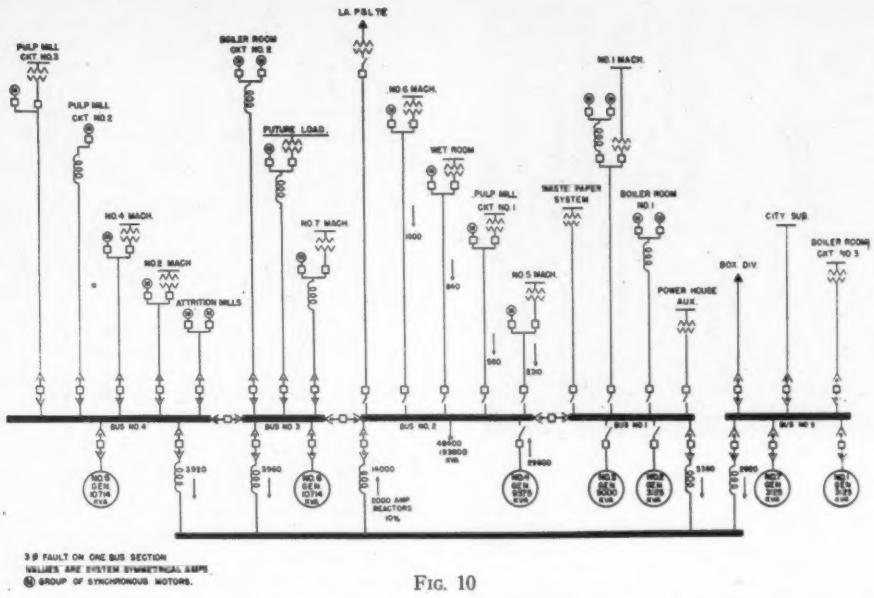

FIG. 10

by longhand methods, and this is where the "A. C. Network Calculator" comes into use. The network calculator is a miniature power system in which actual, or contemplated electrical networks, can be set up on a small scale to permit the study and analysis of operating or design problems.

The comparison of the component parts of the A. C. Network Calculating Board to the actual system part is shown in Fig. 6.

Very small impedances are used to represent the various generators, synchronous motors, induction motors, transformers, cables, etc. These miniature impedances are selected to be in direct proportion of the actual impedance of the apparatus which they represent, and are interconnected to simulate the distribution system. Short circuits are deliberately applied to the miniature system and the current measured by an instrument.

Figure 7 shows a typical meter desk of the network calculating board where all accurate measurements of bus voltages, current distribution, associated power factor and watts or Vars distribution are read on the master instruments.

Since all parts of the actual system are simulated in direct proportion, the values of short circuit currents on the miniature system will be in direct proportion to the values that would be secured on the actual system.

After the distribution system is set up on the calculating board, short circuits can be applied very rapidly to any part of the system. The values of actual short circuit current may be obtained by multiplying the value secured on the miniature system by a factor, which is in proportion to the ratio of the actual impedance of the apparatus to the impedance of the miniature impedance representing the corresponding equipment.

Figure 8 shows a typical short circuit calculating board, or A. C. Network Analyzer. Note that this is made up of many duplicate units, each unit representing a generator, a motor, etc., all of which can be connected in the proper manner to duplicate the actual system.

Since the voltage used on the network analyzer is

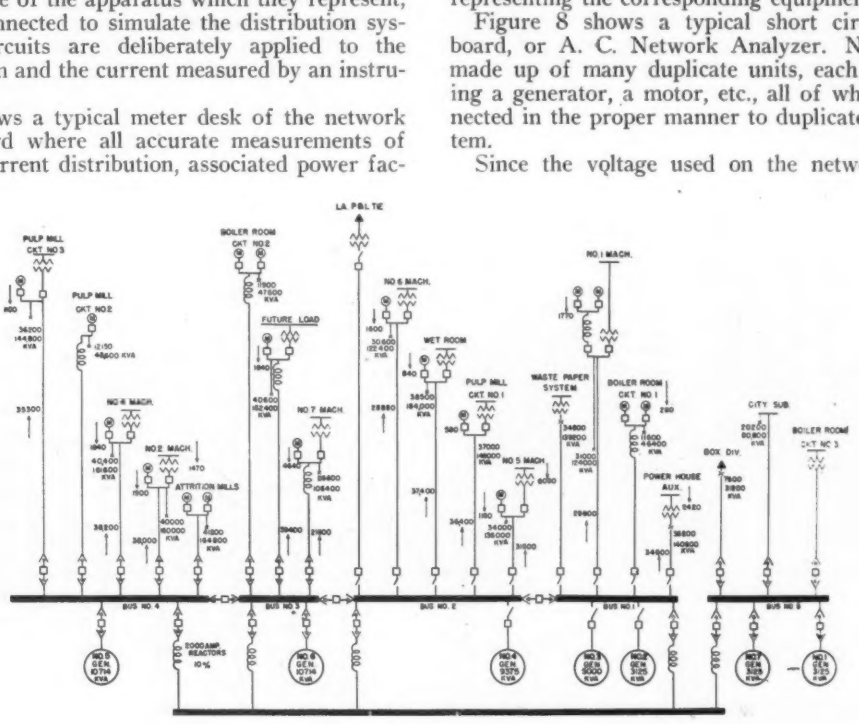

FIG. 11

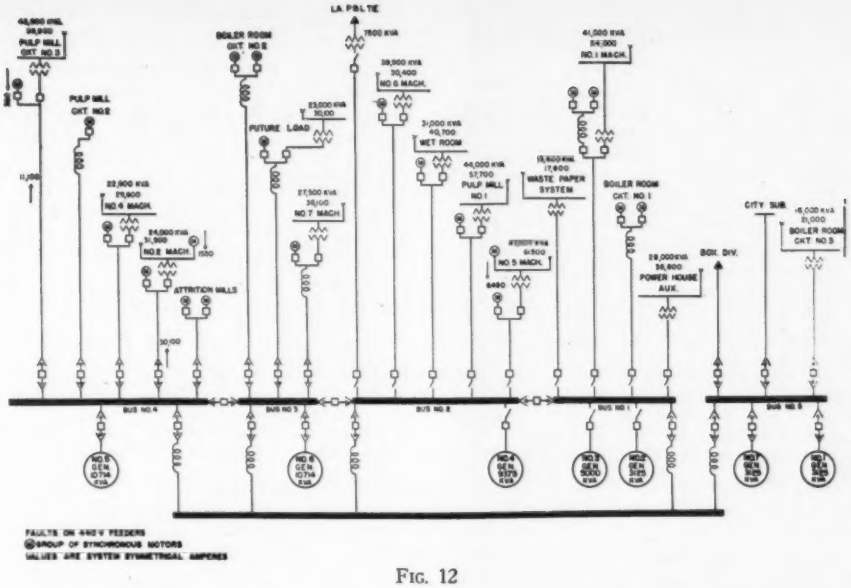

FIG. 12

very low, the actual currents secured are low, but are very accurate in direct proportion.

While it has been possible in the system under discussion to use 2300 volt generation, the present number of generators representing a total capacity of 45,185 kva. is practically the maximum that can be operated at 2300 volts. This is due to the fact that the short circuit and momentary current becomes excessive thus requiring circuit breakers of high short circuit and momentary capacity.

Current limiting reactors provide the only economical means of limiting the short circuit current, but their use must be given very careful attention for proper application.

While, in the past, many schemes have been used for the arrangement of current limiting reactors, the "synchronizing bus" scheme generally is the most economical and flexible for a paper mill distribution system.

Figure 9 shows the general arrangement of the synchronizing bus scheme.

Utilizing this method, the synchronizing bus provides a tie between all generators and also provides a path for flow of power where needed.

A diagram showing the complete distribution system in the Gaylord Mill was prepared, and the synchronizing bus arrangement was used. Future generating units and mill loads were also shown on the 2300 volt-440 volt single line diagram.

In obtaining information necessary for a calculating board study, it must be remembered that the study will be no more accurate than the information supplied and set up on the board.

Together with the 2300-440 volt single line diagram, complete information was secured on all generators, transformers, connected synchronous loads, induction loads and the sizes, lengths and spacing of all feeder cables on each circuit. From this information, an impedance diagram was made. With this simplified impedance diagram, the necessary connections and arrangements were made on the calculating board. They

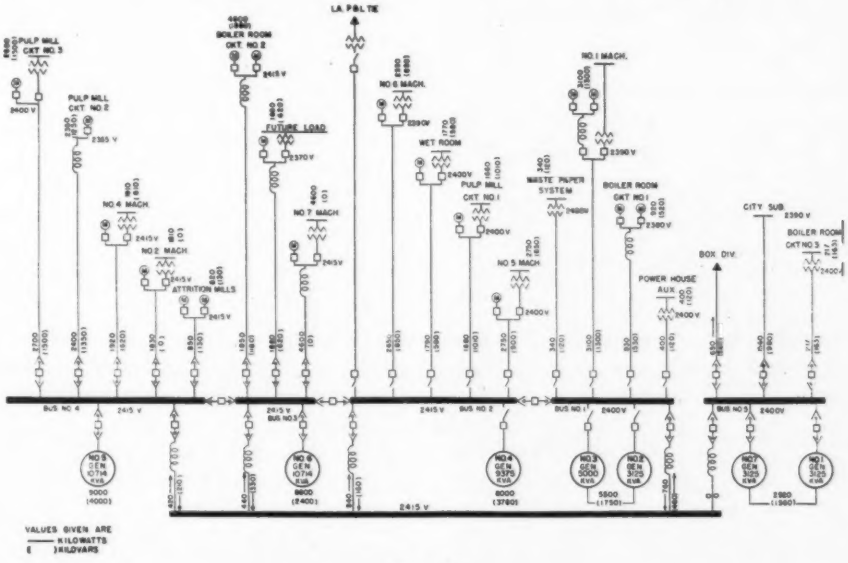

FIG. 13

were set up on a base (in the present case it was 40,000 kva.) to permit easy reading on the scales of the instruments used for this study.

With this system set up in complete miniature replica on the calculating board, the three phase short circuit on the main generating buses was obtained.

It is to be noted that the bus section No. 2 has a short circuit magnitude of 48,400 symmetrical amperes or 193,600 kva. This is made up as follows: 29,600 amp. for No. 4 turbine; 14,000 amp. through the 2,000-amp. 10% reactor; 1600 amp. from No. 6 machine feeder circuit; 580 amp. from No. 1 pulp mill feeder circuit, and 840 amp. from wet room feeder circuit and 2,310 amp. from No. 5 machine feeder circuit.

Figure 11 shows the three-phase short circuit on the 2300-volt distribution load centers.

The short circuit current on No. 7 machine 2300-volt distribution load center is 26,600 symmetrical amp. or 106,400 kva. This is made up of 21,800 amp. from the main bus section and 4.640 amp. from the machine motors.

Figure 12 shows the three-phase short circuit on the 440-volt load centers.

Figure 13 shows the voltage leevls on the system under normal operating conditions. This figure also shows the loads in kilowatts and kilovars.

In concluding, the information obtained from the calculating board study has given a very good cross sectional view of the distribution system, together with a great deal of detailed information that has indicated methods of improvements to the system which would have possibly never been apparent by any other means.

With all due respect to mathematical solutions of problems in complicated distribution systems, it is the authors' opinion that the A. C. Network Calculator will be used to an advantage in simplifying many of the electrical problems encountered by engineers in the pulp and paper industry.

Acknowledgment

To Gaylord Container Corporation for permission to present these present data.

To Westinghouse Electric Corporation for pictures and information on the A. C. Network Calculator used in making this study.

To General Electric Company for Oscillograms and other information.

Frank Greenwood

Frank Greenwood, a former member of the Technical Association of the Pulp and Paper Industry died on February 2nd in Richmond, Va.

Mr. Greenwood was born in Dorchester, Mass., on March 17, 1872. He was associated with J. H. Wallace, consulting engineer in some of the earlier developments of the kraft industry, especially the Halifax Paper Corporation at Roanoke Rapids, N. C., and the Southern Paper Company mill at Moss Point, Miss. He went with the Munising Paper Company, Munising, Mich., in 1925, from which company he retired in 1940. About a year later he suffered a stroke and was confined to his home with his son and daughter-in-law, Mr. and Mrs. Jack Greenwood, 208 Matoaka Road, Richmond, Va. A daughter, Mrs. Thomas Gilligan of Mount Vernon, N. Y., also survives. He was interred in Mt. Calvary Cemetery, Richmond, Va., on February 4th, following services at the Frank A. Bliley Funeral Home in Richmond. The Rev. Frederick J. Warnecke, Rector of St. Marks Episcopal Church officiated.

New TAPPI Members

The Executive Committee of the Technical Association of the Pulp and Paper Industry has elected the following to membership:

Alfred R. Askin, Engineering Student, Marathon Paper Mills of Canada Ltd., Marathon, Ontario. Attended the University of Toronto.

Edmond S. Bauer, Assistant Sales Manager, Monsanto Chemical Co., Springfield, Massachusetts, a 1939 graduate of Newark College of Engineering.

Charles A. Bicking, Quality Control Engineer, Hercules Powder Co., Wilmington, Delaware, a 1931 graduate of Massachusetts Institute of Technology, with an M.S. degree.

Frederick W. Binns, Chemical Engineer, Virginia Smelting Co., Boston, Massachusetts, a 1921 graduate of Massachusetts Institute of Technology.

James E. Brennan, Chief Research Chemist, Ecusta Paper Corp., Pisgah Forest, North Carolina, a 1933 graduate of Holy Cross College.

W. K. Cahn, Managing Proprietor, Wings & Co., Hongkong, China, a 1928 graduate of Senshu University, with an M.S. degree.

Earnest P. Cook, Assistant Chief Engineer, Brown Company, Berlin, New Hampshire.

Percival J. J. Cox, Development Engineer, Hummel & Downing Co., Milwaukee 1, Wisconsin, a 1940 graduate of Michigan College of Mining and Technology, with an M.S. degree in 1942.

John C. Darrah, Chemical Engineer, Penobscot Chemical Fibre Co., Great Works, Maine, a 1920 graduate of the University of Manie.

Irving V. Earle, Jr., Chemist, The Upson Co., Lockport, New York, a 1934 graduate of the New York State College of Forestry.

Robert Gardner, Vice-President, Gardner Gibbons Printing Co., Philadelphia, Pennsylvania. Attended the University of Pennsylvania.

Kenneth E. Glidden, Chief, Pulping Section, Institute of Paper Chemistry, Appleton, Wisconsin, a 1932 graduate of Johns Hopkins University, with a Ph.D. degree.

John H. Goldberger, Research Chemist, Ecusta Paper Corp., Pisgah Forest, North Carolina, a 1931 graduate of the Technical University of Vienna.

William G. Gray, Plant Engineer, St. Marys Kraft Corp., St. Marys, Georgia. Attended College of Applied Science, Syracuse University.

Marketing by Manufacturers

Richard D. Irwin, Inc. has recently issued "Marketing by Manufacturers," edited by Charles F. Phillips of Bates College, assisted by Ralph S. Alexander, Columbia University. Robert T. Browne, Pillsbury Mills, Inc. Ralph R. Butler, McKinsey & Co., Harvey W. Huegy, University of Illinois, Harry R. Tosdal, Harvard University and others (637 pp. 6 x 9).

It was written to assist the manufacturer in reading policy decisions in the handling of marketing problems. Among the subjects covered are: The Distributive Machine and its Cost; Scope and Techniques of Market Research; Designing and Packaging the Product; and Government Control and Aid. In the appendix is a check list for introducing consumer goods.

Copies may be obtained from the Book Department of the Technical Association of the Pulp and Paper Industry, 122 East 42nd Street, New York 17, N. Y. at $6.00 per copy.

Progress of Tests of Electrometric Methods for Tall Oil Analysis by ASTM

By Arthur Pollak[1], P. R. Wiley[1], and F. W. Taylor[1]

Abstract

In analyzing tall oils electrometric endpoints are more reproducible among laboratories than colorimetric endpoints. Thus for the acid number of whole tall oil the average deviation among a number of laboratories was 2.2% colorimetrically compared to 0.7% electrometrically. For saponification number the improvement was from 2.5 to 1.4%, while rosin acid number deviations improved from 3.9 to 0.7%. Similar trends were observed for refined tall oil.

This work was undertaken to test tentative electrometric tall oil testing methods offered by the American Society for Testing Materials, Committee D-17 on Naval Stores, Subcommittee 5 on tall oil. Whole and refined tall oils were analyzed for acid number, saponification number, and rosin acids number by nineteen laboratories using the suggested electrometric methods. The results are compared with similar cooperative tests conducted in 1946 using the colorimetric methods of the present designation D803-44T. The comments of the participating laboratories which included members of the Chemical Products Committee of TAPPI are also included.

The American Society for Testing Materials has been trying to standardize and improve methods for testing tall oil as well as definitions for tall oil since 1943. The work is done by Subcommittee 5, on Tall Oil, under Committee D-17, on Naval Stores.

Tentative methods of testing tall oil D803-44T, and tentative definitions of terms relating to tall oil, D804-44T, were established and published by the society in 1945.

The methods were first established by collating published methods and many suggestions from committee members. Thereafter improvements were sought by committee discussions, correspondence, and by cooperative tests.

Cooperative Tests

At the June 1946 meeting of the American Society for Testing Materials, Committee D-17 on Naval Stores, and its Subcommittee 5 on tall oil it was agreed that the techniques of colorimetric endpoints, on which tall oil analyses depend, were unsatisfactory. It was suggested that they be replaced by electrometric methods using alkali resistant glass electrodes. The methods for rosin acids appeared controversial, but a study of this problem was deferred until more reproducible titration endpoints could be demonstrated.

Accordingly a procedure using electrometric methods was adapted from the Tentative Methods of Testing Tall Oil D803-44T and circulated among the membership of Committee D-17 and the TAPPI Committee on Chemical Products. A total of 33 invitations were sent out. Of the 23 who were able to volunteer, 19 submitted data and valuable comments. This 78% response was very gratifying.

Acknowledgement is made of the assistance rendered by Mr. M. G. Bestul of the Development Department of the West Virginia Pulp and Paper Company in the work of this report.

The nineteen laboratories which participated in the tests were affiliated with pulp and paper companies, industrial chemical companies, universities, government agencies, and industrial consultants. These laboratories are indicated only by number in the tabulations to follow. The numbers used are the same as those submitted to the American Society for Testing Materials for identification of the participating laboratories. The numbers omitted in the tabulations are those of the laboratories which failed to submit results.

Samples

The two 500 gram samples addressed to each participant in these tests were supplied by the West Virginia Pulp and Paper Company. They were labelled:

CRUDE TALL OIL	REFINED TALL OIL
Sample 4747	Sample 4748
FOR COOPERATIVE TESTS	FOR COOPERATIVE TESTS

The samples were selected as typical of two grades of commercial tall oil available in this country and were similar but not identical to samples used for the 1946 cooperative test.

Test Methods

Each participant received a copy of the electrometric methods given below and for reference a copy of the present ASTM Tentative Methods D803-44T, which include the colorimetric methods.

Acid Number

Apparatus

The apparatus shall consist of the following:

Meter—An indicating type potentiometer that will operate with an accuracy of plus or minus 0.1 pH over a range of 1 to 13 pH using an alkali resistant glass electrode and saturated calomel half cell.[1]

Stirrer—A variable speed mechanical stirrer of any suitable type equipped with a glass propeller-type stirring paddle.

Beaker—Tall form, 250 ml. capacity, made of chemically resistant glass.[3]

Reagents

Sodium hydroxide solution—(0.5 *N*) standardize to plus or minus 0.001 *N*.

Methyl alcohol—Synthetic grade.[2]

Procedure

In a 250-ml. tall form beaker of chemically resistant glass[3], dissolve 3.95 to 4.05 grams of the sample[4] of tall oil in 100 ml. of methyl alcohol. Twirl the flask to dissolve the sample, using slight heat if necessary.

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[*] Presented at the meeting of the TAPPI Chemical Products Committee, held in Asheville, N. C., Oct. 10, 1947.

[1] Development Dept., West Virginia Pulp & Paper Co., Charleston, S. C.

[1] The Leeds and Northrup No. 7661-A1 assembly with Std 1199-30 high alkaline resistant glass electrode or the Macbeth pH meter equipped with Beckman electrodes No. 1170 and 1190E, or the Fisher Titrimeter, Senior model, with electrode No. 9-312-27, are suitable for use following this procedure.

[2] The pure methanol, 99.5%, sold commercially by most ueading producers of methanol is satisfactory. Ethyl alcohol (formula 3A or 30) may be used.

[3] Pyrex or Kimble glass is very satisfactory for this purpose.

[4] It is desirable to stay within rather narrow limits as to size of sample, in order not to introduce too large variations in the relative concentrations of tall oil, alcohol, and alkali solutions.

Turn pH meter on and let warm up for a few minutes. Balance the meter using a standard buffer solution, and rinse off electrodes with distilled water followed with methyl alcohol.

Adjust the beaker containing the sample so that the lower half of each electrode is immersed in the sample. Start stirrer and adjust its speed so that there is vigorous stirring without spattering. Place the burette containing the standardized sodium hydroxide solution in position so that the tip is close to the surface of the sample. Record the initial pH. Add suitable small portions of the 0.5 *N* NaOH and, waiting after each addition until an unchanging potential has been established, record the pH and the buret readings. Five milliliter portions of NaOH can be added until a pH of about 8 is reached, then 1 ml. portions are added until the change in pH per portion added exceeds 0.3 pH. Then, 0.1 ml. or smaller portions of NaOH are added until the end point has been passed as indicated by a significant decrease in pH change per unit volume added. After the pH change is less than 0.1 pH per 0.1 ml. the increments can be increased to 1.0 ml. End the titration after the pH has reached 12 or above.

The inflection point is taken as the end point of the titration. It may be found by inspection of the graph or by plotting the change of pH per milliliter against pH. The milliliters NaOH is then read off the curve to the nearest 0.1 ml.

Calculation

Calculate the acid number expressed in milligrams of KOH per gram from the following formula: (Note.) The acid number is reported to three significant digits.

$$\text{Acid Number} = \frac{A \times N \times 56.1}{W}$$

Where A = millimeters of NaOH solution
N = normality of NaOH solution
W = weight of sample in grams, dry basis

Saponification Number

Apparatus

The apparatus shall consist of the following:

Flask—250 ml. of chemically resistant glass, preferably with ground glass standard 35/45 taper joint, or 35/20 semiball joint.

The other items are the same as given under Acid Number.

Reagents

Alcoholic potassium hydroxide solution (0.5 *N*)—Dissolve 33.0 grams of pure potassium hydroxide pellets or sticks (85% KOH) in methanol[5] and dilute to 1 liter in a volumetric flask. The solution must be clear. If it contains insoluble matter, it shall be either decanted after settling overnight or filtered. Standardize to plus or minus 0.001 *N*.

Sulphuric acid solution (0.5 *N*)—Standardize to plus or minus 0.001 *N*.

Procedure

Weigh 2.95 to 3.05 grams of the sample[6] of tall oil into a 250-ml. Erlenmeyer flask[7] of chemically resistant glass[8] preferably with ground-glass standard 34/45 taper joint, or ground-glass standard 35/20 semiball joint. Add 50.0 ml. of alcoholic potassium hydroxide. Connect the flask to a water-cooled reflux condenser. Then place the flask in a water bath and allow the solution to reflux for 0.5 hour. Cool and transfer contents to 250-ml. tall form beaker, washing out flask with 10 ml. portions of methyl alcohol unit 50 ml. has been added to the beaker.

Turn pH meter on and let warm up for a few minutes. Balance the meter using standard buffer solution then rinse off the electrode with distilled water followed by methyl alcohol.

Adjust the beaker containing the sample so that the lower half of each electrode is immersed in the sample. Start stirrer and adjust its speed so that there is vigorous stirring without spattering. Place the buret containing the standardized sulphuric acid solution in position so that the tip is close to the surface of the sample. Record the initial pH. Add suitable small portions of the 0.5 *N* sulphuric acid and, waiting after each addition until an unchanging potential has been established, record the pH and the buret readings. Five-milliliter portions of sulphuric acid can be added until a pH of about 12 is reached, then 1-ml. portions are added until the total change in pH for one portion added is over 0.3. Then 0.1-ml. or smaller portions of sulphuric acid are added until the end point has been passed as indicated by a significant decrease in pH change per unit volume added. After the pH change is less than 0.1 pH per 0.1 ml., the increments can be increased to 1.0 ml. End the titration after the pH has dropped to 8.0 or below.

Plot a graph with milliliters of sulphuric acid as the abscissa and the pH readings as the ordinate. The inflection point is taken as the end point of the titration. It may be found by inspection of the graph, or by plotting the change of pH per milliliter against pH. The milliliters of KOH is then read off the curve to the nearest 0.1 ml.

A blank determination is made using 50.0 ml. of 0.5 *N* alcoholic KOH and titrating with 0.5 *N* sulphuric acid as described above.

Calculation

Calculate the saponification number, expressed as milligrams of KOH per gram from the following formula:

$$\text{Saponification Number} = \frac{(B - S) \times N \times 56.1}{W}$$

Where B = milliliters of H_2SO_4 for titration of blank
S = milliliters of H_2SO_4 for titration of sample
N = normality of the H_2SO_4 solution, and
W = weight of sample in grams, dry basis

Rosin Acids Number

Apparatus

The apparatus shall consist of the following:

Flask—250 ml. capacity, of chemically resistant glass, preferably fitted with a ground-glass standard 35/45 taper joint, or 35/20 semiball joint.

The other items are the same as given under Acid Number.

Reagents

Methyl-alcohol—Pure methanol (99:5%) sold commercially by most of the leading producers of methanol.

Methyl sulphuric acid solution—Slowly pour 100 grams of sulphuric acid (sp. gr. 1.82 to 1.84), while stirring constantly, into 400 grams of methyl alcohol (99.5%). Preserve in a glass stoppered bottle.

Potassium hydroxide in methyl alcohol—Dissolve 33 grams of potassium hydroxide, preferably in the pellet form, in 1 liter of methyl alcohol (99:5%) to form an approximately half normal solution.[5] Potassium acid phthalate is preferable for standardizing the solution; thus 2.553 g of C_6H_4 COOKCOOH will be neutralized by 25.00 ml. of 0.5000 *N* KOH.

[5] Ethyl alcohol (formula 3A or 30) may be used.

[6] It is desirable to stay within rather narrow limits as to size of sample, in order not to introduce too large variations in the relative concentrations of tall oil, alcohol, and alkali solutions.

[7] The flasks should be either new or cleaned by rinsing with a hot solution of hydrofluoric acid (2 to 3%). This removes from the flasks the adhering partially distintegrated silicates which would interfere with the determination.

[8] Pyrex or Kimble glass is very satisfactory for this purpose.

Procedure

Weigh 4 to 5 grams of the tall oil sample into a 250-ml. flask on a balance having a sensitivity of 0.01 gram. Add 100 ml. of methyl alcohol, and twirl the flask to dissolve the oil. Add 5 ml. of the methyl sulphuric acid solution and boil the entire mixture for 2 minutes under a water cooled reflux condenser. When the contents have cooled transfer to a 250-ml. tall form beaker, washing out the flask with 10-ml. portions of methyl alcohol until 50 ml. has been added to the beaker.

Turn pH meter on and let warm up for a few minutes. Balance the meter using standard buffer solution then rinse off the electrodes with distilled water followed by methyl alcohol.

Adjust the beaker containing the sample so that the lower half of each electrode is immersed in the sample. Start stirrer and adjust its speed so that there is vigorous stirring without spattering. Place the buret containing the standardized methyl alcohol solution of potassium hydroxide in position so that the tip is close to the surface of the sample. Record the initial pH. Add suitable small portions of the 0.5 *N* KOH and, waiting after each addition until an unchanging potential has been established, record the pH and the buret readings. Five-milliliter portions of KOH can be added until a pH of about 1 to 1.5 is reached, then 1.0-ml. portions are added until the total change in pH for one portion added is over 0.3. Then 0.1-ml. or smaller portions of KOH are added until the first end point has been passed as indicated by a significant decrease in pH change per unit volume added. Then 1.0- to 2.0-ml. portions of KOH can be added until the pH increases to over 0.3 for each portion added. Then again, 0.1-ml. or smaller portions of KOH are added until the second end point has been passed as indicated by a significant decrease in pH change per unit volume added. After the pH change is less than 0.1 pH per 0.1 ml., the increments can be increased to 1.0 ml. End the titration after the pH has reached 12 or above.

The inflection points are taken as the end points of the titration. They may be found by inspection of the graph, or by plotting the change of pH per milliliter against pH. The milliliters of KOH are then read off the curve to the nearest 0.1 ml. The milliliters of 0.5 *N* KOH consumed between the two inflection points are equivalent to the rosin acid present.

Calculation

Calculate the rosin acids number (note) from the following formula: (Note.—The rosin acids number is convenient for calculations and corresponds to an acid number in that it expresses the milligrams of KOH consumed by the neutralization of the rosin acids in 1 gram of the sample.) The per cent rosin acids is calculated in the usual manner.

$$\text{Rosin Acids Number} = \frac{A \times N \times 56.1}{W}$$

Where A = milliliters of KOH consumed between the two inflection points
N = normality of the KOH solution, and
W = weight of sample in grams, dry basis

Tabulations

The data from the cooperating laboratories were tabulated for each analytical method in Tables I to IV. The results were averaged, the maximum and minimum values noted, and the average deviations computed. Table V summarizes the results for all electrometric tests for the nineteen laboratories. Table VI summarizes the per cent deviations for the electrometric methods compared to those encountered in the 1946 cooperative tests of colorimetric methods.

Whenever comments were made they were abstracted and included with each method since some good suggestions were offered.

The reproducibility of results among laboratories was so good that if the probable values were computed instead of the average values, concordance would appear to be even better.

General Comments

(3)—"The reagents used were:

1. Potassium hydroxide solution (alcoholic)
2. Hydrochloric acid solution (aqueous)

"Pure methanol is used in this laboratory. However, the ASTM methods state that ethyl alcohol (Formula 3A or 30) may be used. At one time this laboratory attempted to use special denatured ethyl alcohol—formula 3A. The results were very unsatisfactory, especially in the case of the resin acids determinations. The test results were invariably higher than when pure methyl alcohol was used. Formula 3A or 30 ethyl alcohol is generally made with 95% alcohol. To be a satisfactory substitute for pure methanol, formula 3A or 30 specially denatured ethyl alcohol should be absolute in respect to moisture."

(4)—"Although our experience with the Titrimeter has been limited to this work, we are satisfied it offers a definite improvement over the colorimetric method. Results in close agreement are possible, we believe, and while the time for tests is somewhat longer it seems that the accuracy of the results justify it."

(5)—"The electrometric methods would make it possible for different analysts all to titrate to the same end-point. Once each analyst had found the correct end point he could then use the indicator method for his routine tests because with a little experience, he could check his own results very well".

(8)—"Our analyst pointed out that the acid number samples were not too readily soluble in methyl alcohol. Isopropyl alcohol might be a better solvent, however, it would complicate the methods with another reagent. Otherwise, the methods appear satisfactory".

(13)—"The electrometric titration methods gave reproducible results but require considerable time because approximately 60 seconds had to be allowed between addition of each increment in the region of the endpoint. The electrometric titration methods appear suitable for referee purposes".

(15)—"The procedures appear to yield more precise and reproducible results than the corresponding colorimetric methods and seem to be more adaptable for dark oils. However, the electrometric procedures are prolonged and their use is not considered practical for routine tests."

TABLE I.—ACID NUMBER

Laboratory Number	Whole Tall Oil	Refined Tall Oil
1	161	181
3	158	178
4	165	180
5	161	180
7	161	179
8	158	179
9	161	180
10	160	178
11	161	179
12	161	180
13	162	181
15	162	182
16	163	181
17	161	179
18	160	181
19	160	181
20 *	179	200
21	160	179
22	161	179
Average	161	180
Maximum	165	182
Minimum	158	178
Average deviation	1	1
Per cent deviation	0.7	0.5

* Results not included in average.

TABLE II.—SAPONIFICATION NUMBER

Laboratory Number	Whole Tall Oil	Refined Tall Oil
3	173	179
4	171	184
5	171	182
7	172	182
8	173	184
9	173	183
11	166	177
12	176	186
13	176	187
15	175	183
16	177	185
17	178	182
18	174	183
19	168	181
20	170	183
21	175	185
22	175	185
Average	173	183
Maximum	178	187
Minimum	166	177
Average deviation	2	2
Per cent deviation	1.4	1.0

ACID NUMBER COMMENTS

(5)—"In the ASTM method—the endpoint is quite difficult to see and inexperienced analysts could probably be off as much as ± 0.5 ml in the titration corresponding to about ± 5 in the acid number.

"By the proposed electrometric method the end point is determined with a pH meter and various operators should not differ by more than ± 0.1 in the titration equivalent to ± 1.0 in the acid number, providing the pH meters are operating satisfactory and the electrodes are kept clean.

"In determining the acid number of both the crude and refined tall oil samples by the electrometric method, the glass electrode became coated with a film of oil. In four out of fifteen tests made, the oil film caused such errors in the pH determinations that the results were obviously no good and hence omitted from the above table. In two of the tests the electrode was wiped off with a clean dry rag just before reaching the endpoint thus saving the tests. In the other nine tests the oil film either didn't affect the pH or caused only a slight error. Just why the oil film affected some tests and not others is not known."

"When the aqueous solution of NaOH is added to the alcoholic solution of tall oil, the solubility of the oil decreases enough to cause much of the oil to separate. By titrating with an alcoholic solution of the alkali this would not occur. One run was made on refined tall oil using some of the alcoholic KOH. The acid number obtained was 180 which agrees with that obtained by the proposed electrometric method".

(17)—Page 1—Beaker—tall form, 250-ml. capacity —no such beaker is listed in our catalogues".

(21)—It is suggested that half normal alcoholic KOH be used as an alternate alkali in the acid number determination. This would necessitate only one standardized base for these determinations.

TABLE III.—ROSIN ACIDS NUMBER—MODIFIED WOLFF METHOD

Laboratory Number	Whole Tall Oil	Refined Tall Oil
3	79	67
4	78	63
5	80	65
7	79	65
8	80	64
9	79	63
11	81	63
12	80	64
13	79	63
15	79	65
16	79	61
17	79	63
18	78	63
19	78	63
20	80	64
21	80	64
22	79	63
Average	79	64
Maximum	81	67
Minimum	78	63
Average deviation	1	1
Per cent deviation	0 7	1.6

TABLE IV.—ROSIN ACIDS PER CENT—MODIFIED WOLFF METHOD

Laboratory Number	Whole Tall Oil	Refined Tall Oil
3	43	36
4	42	34
5	43	35
7	43	35
8	43	35
9	43	34
11	44	34
12	43	34
13	43	34
15	42	35
16	43	33
17	43	34
18	42	34
19	42	34
20	43	35
21	43	34
22	43	34
Average	43	34
Maximum	44	36
Minimum	42	34
Average deviation	0.3	0.5
Per cent deviation	0 7	1 6

SAPONIFICATION NUMBER COMMENTS

(5)—"No difficulties were experienced in using the proposed electrometric method and the end point should easily be determined to within ± 0.1 ml."

(17)—"Record the initial pH. The initial pH may be off scale".

ROSIN ACIDS NUMBER COMMENTS

(11)—"We find that if the instructions under the Rosin Acids Procedure are followed the first break in the curve may be over-run. For example, 15 ml. of alcoholic KOH may give pH 0.6 while 20 ml. may give pH 6.0.

"We also had a great deal of difficulty in obtaining a constant pH reading in this non-aqueous solution. This may be characteristic of the model pH meter we used, but we doubt it as similar troubles were encountered with the Beckman model G. Even though our stirrer motor was grounded we found it to influence the readings in this case".

(17)—"The 5-ml. portions of KOH can be added until a pH of about 1 to 1.5 is reached. In our case the endpoint would have been passed had we done this. In fact, the endpoint would have been passed had we added 5 ml. after a pH of only 0.5 had been reached."

TABLE V.—TALL OIL TESTS FROM NINETEEN LABORATORIES

Test	Whole Tall Oil			Refined Tall Oil		
	Average	Max.	Min.	Average	Max.	Min.
Acid number	161	165	158	180	182	178
Saponification number	173	178	166	183	187	177
Rosin acids number	79	81	78	64	67	63
Rosin acids, %	43	44	42	34	36	34

TABLE VI.—TALL OIL TESTS, AVERAGE DEVIATIONS IN PER CENT

Test	1946 Colorimetric Method		1947 Electrometric Method	
	Whole Tall Oil	Refined Tall Oil	Whole Tall Oil	Refined Tall Oil
Acid number	2.2	1.8	0.7	0.5
Saponification number	2.5	0.8	1.4	1.0
Rosin acids number, modified Wolff	3.9	1.9	0.7	1.6

The idea of including electrometric methods with the present tentative standards was favorably received at the June 1947 meeting of Committee D-17 on Naval Stores. After collating various comments and suggestions the volumetric methods of Designation D803-44T will be rewritten and submitted by Subcommittee 5 on Tall Oil to Committee D-17 on Naval Stores. If the revision is voted favorably it will be recommended as the revised Tentative Method of the Society.

With the improved precision available with electrometric endpoints the subcommittee proposes to reconsider the accuracy of procedures for rosin acids. It is hoped that a method satisfactory to all concerned will evolve.